Fig. 1-1
1/45

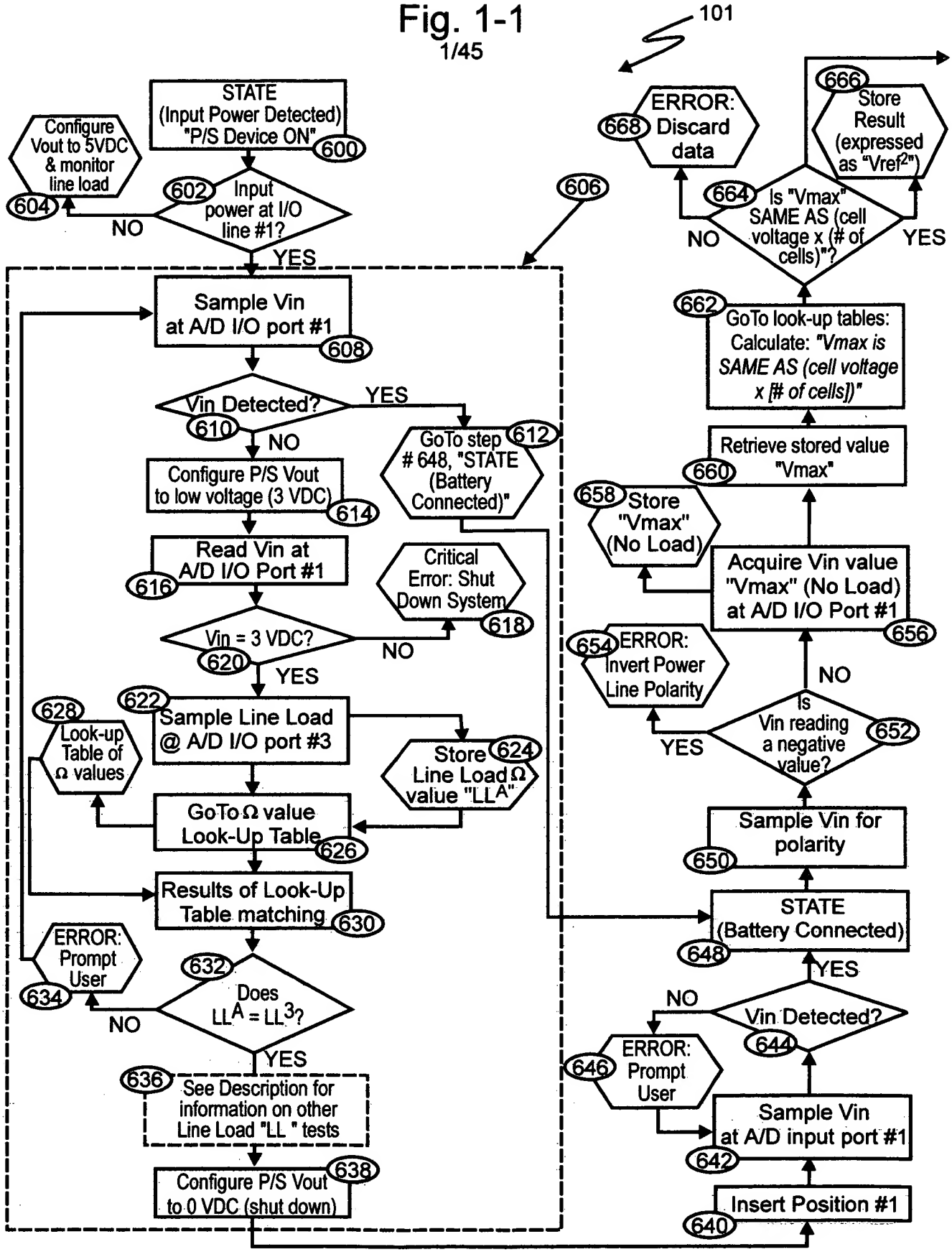
101
STATE (Input Power Detected) "P/S Device ON" 600
Configure Vout to 5VDC & monitor line load 604
602 Input power at I/O line #1?
NO
YES
606
Sample Vin at A/D I/O port #1 608
Vin Detected? 610
YES
NO
GoTo step # 648, "STATE (Battery Connected)" 612
Configure P/S Vout to low voltage (3 VDC) 614
Read Vin at A/D I/O Port #1 616
Critical Error: Shut Down System 618
Vin = 3 VDC? 620
NO
YES
622 Sample Line Load @ A/D I/O port #3
628 Look-up Table of Ω values
Store Line Load Ω value "LL^A" 624
GoTo Ω value Look-Up Table 626
Results of Look-Up Table matching 630
ERROR: Prompt User 634
632 Does LL^A = LL^3?
NO
YES
636 See Description for information on other Line Load "LL " tests
Configure P/S Vout to 0 VDC (shut down) 638
ERROR: Discard data 668
666 Store Result (expressed as "Vref^2")
664 Is "Vmax" SAME AS (cell voltage x (# of cells)"?
NO
YES
662 GoTo look-up tables: Calculate: "Vmax is SAME AS (cell voltage x [# of cells])"
Retrieve stored value "Vmax" 660
658 Store "Vmax" (No Load)
Acquire Vin value "Vmax" (No Load) at A/D I/O Port #1 656
654 ERROR: Invert Power Line Polarity
NO
YES
Is Vin reading a negative value? 652
Sample Vin for polarity 650
STATE (Battery Connected) 648
YES
NO
Vin Detected? 644
646 ERROR: Prompt User
Sample Vin at A/D input port #1 642
Insert Position #1 640

Fig. 1-2

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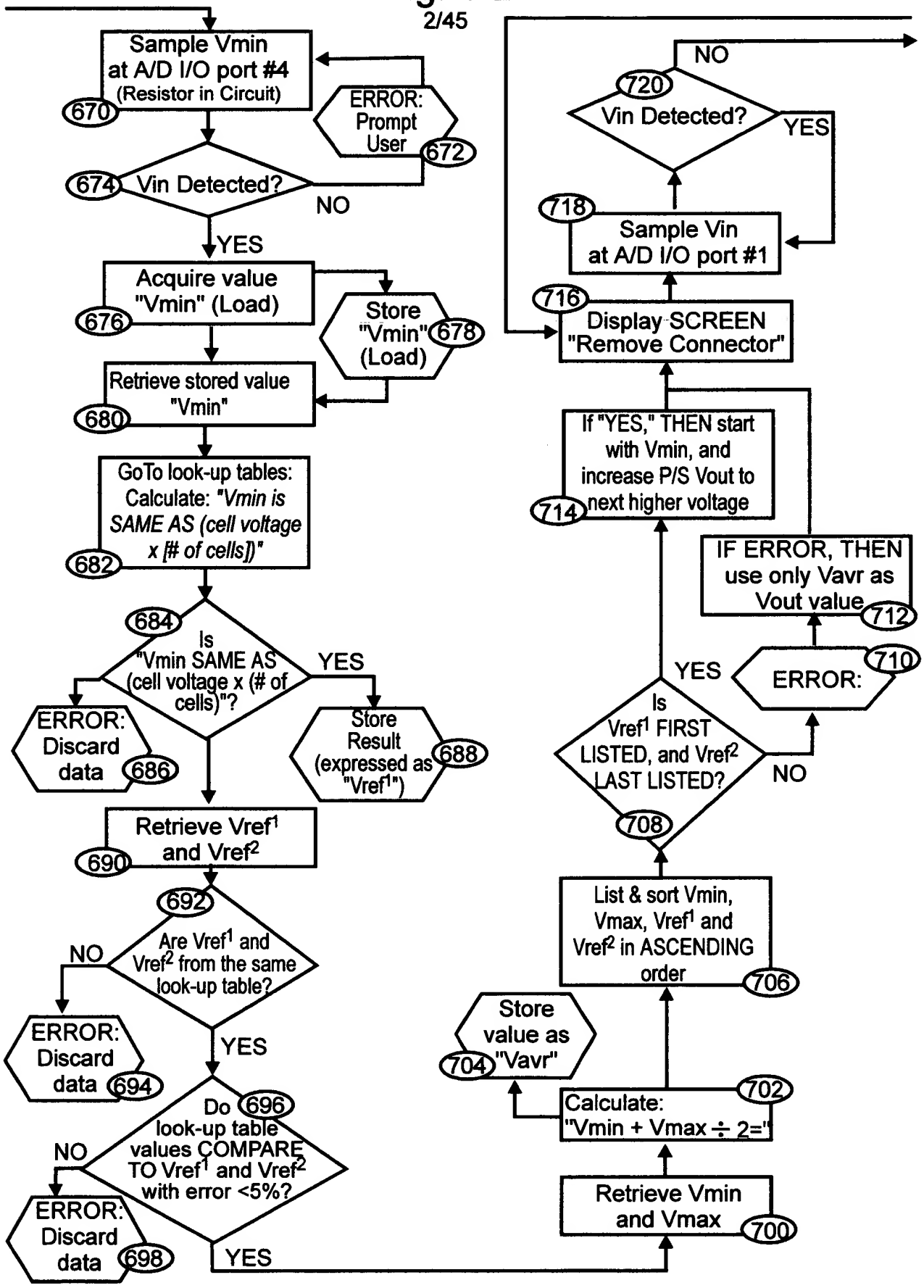
Sample Vmin at A/D I/O port #4 (Resistor in Circuit)
670
ERROR: Prompt User
672
Vin Detected?
674
NO
YES
Acquire value "Vmin" (Load)
676
Store "Vmin" (Load)
678
Retrieve stored value "Vmin"
680
GoTo look-up tables: Calculate: "Vmin is SAME AS (cell voltage x [# of cells])"
682
Is "Vmin SAME AS (cell voltage x (# of cells)"?
684
YES
ERROR: Discard data
686
Store Result (expressed as "Vref1")
688
Retrieve Vref1 and Vref2
690
Are Vref1 and Vref2 from the same look-up table?
692
NO
YES
ERROR: Discard data
694
Do look-up table values COMPARE TO Vref1 and Vref2 with error <5%?
696
NO
YES
ERROR: Discard data
698
Retrieve Vmin and Vmax
700
Calculate: "Vmin + Vmax ÷ 2="
702
Store value as "Vavr"
704
List & sort Vmin, Vmax, Vref1 and Vref2 in ASCENDING order
706
Is Vref1 FIRST LISTED, and Vref2 LAST LISTED?
708
YES
NO
ERROR:
710
IF ERROR, THEN use only Vavr as Vout value
712
If "YES," THEN start with Vmin, and increase P/S Vout to next higher voltage
714
Display SCREEN "Remove Connector"
716
Sample Vin at A/D I/O port #1
718
Vin Detected?
720
NO
YES

Fig. 1-3

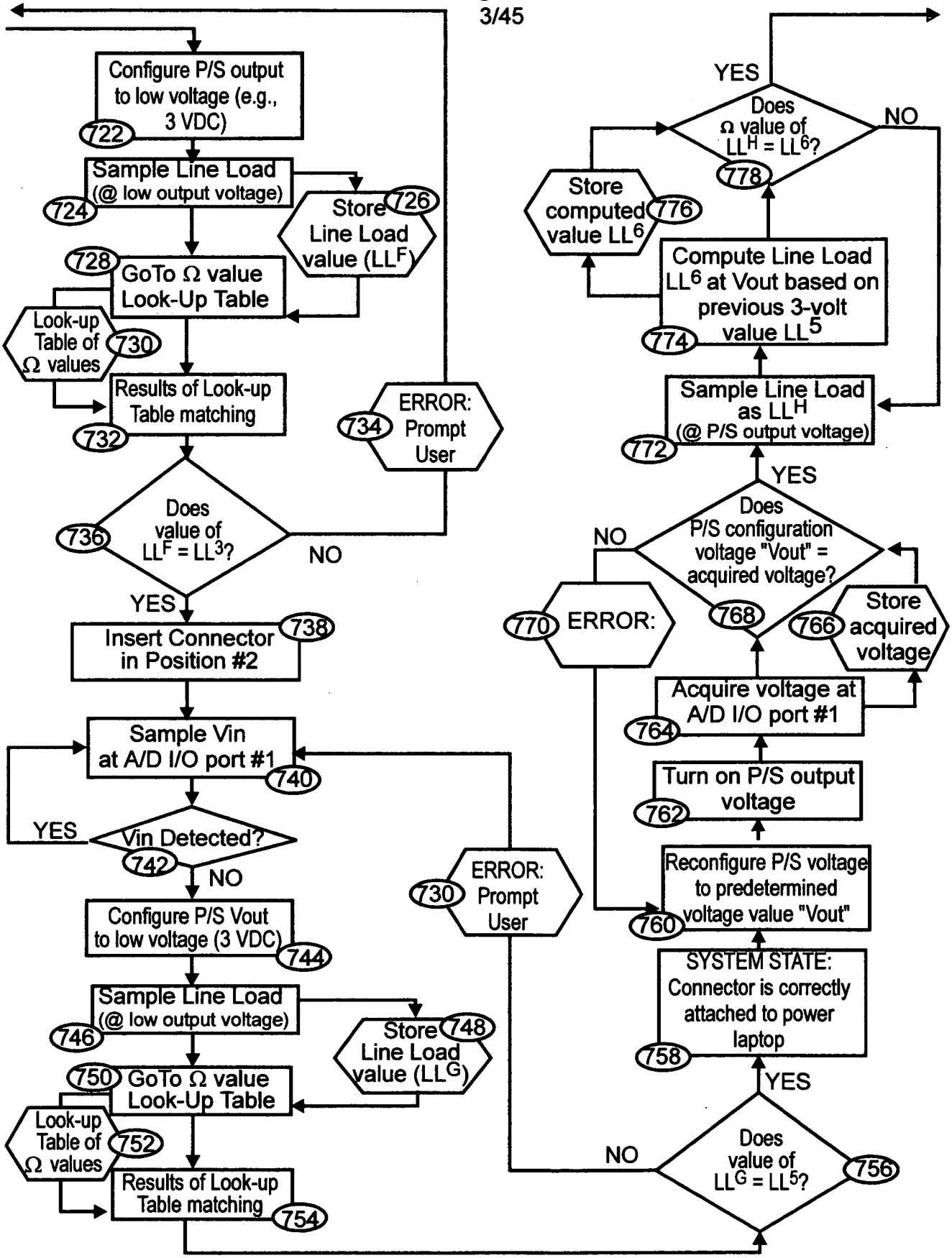
Configure P/S output to low voltage (e.g., 3 VDC)
722
Sample Line Load (@ low output voltage)
724
Store Line Load value (LL^F)
726
GoTo Ω value Look-Up Table
728
Look-up Table of Ω values
730
Results of Look-up Table matching
732
ERROR: Prompt User
734
Does value of $LL^F = LL^3$?
736
NO
YES
Insert Connector in Position #2
738
Sample Vin at A/D I/O port #1
740
YES
Vin Detected?
742
NO
Configure P/S Vout to low voltage (3 VDC)
744
Sample Line Load (@ low output voltage)
746
Store Line Load value (LL^G)
748
GoTo Ω value Look-Up Table
750
Look-up Table of Ω values
752
Results of Look-up Table matching
754
ERROR: Prompt User
730
Does value of $LL^G = LL^5$?
756
NO
YES
SYSTEM STATE: Connector is correctly attached to power laptop
758
Reconfigure P/S voltage to predetermined voltage value "Vout"
760
Turn on P/S output voltage
762
Acquire voltage at A/D I/O port #1
764
Store acquired voltage
766
Does P/S configuration voltage "Vout" = acquired voltage?
768
NO
ERROR:
770
YES
Sample Line Load as LL^H (@ P/S output voltage)
772
Compute Line Load LL^6 at Vout based on previous 3-volt value LL^5
774
Store computed value LL^6
776
Does Ω value of $LL^H = LL^6$?
778
NO
YES

Fig. 1-4

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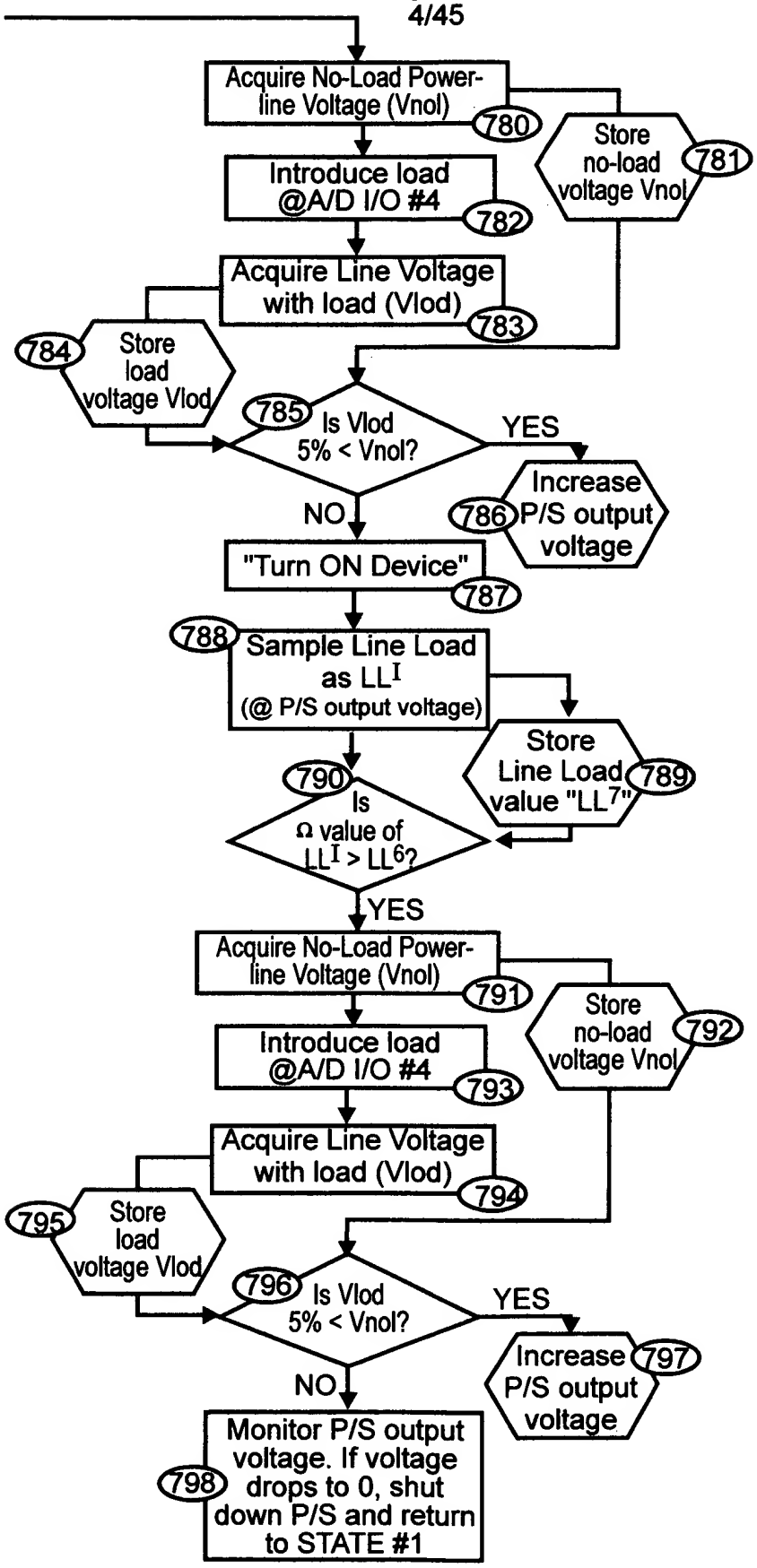
Acquire No-Load Power-line Voltage (Vnol)
780
Store no-load voltage Vnol
781
Introduce load @A/D I/O #4
782
Acquire Line Voltage with load (Vlod)
783
784
Store load voltage Vlod
785
Is Vlod 5% < Vnol?
YES
Increase P/S output voltage
786
NO
"Turn ON Device"
787
788
Sample Line Load as LL^I (@ P/S output voltage)
Store Line Load value "LL^7"
789
790
Is Ω value of LL^I > LL^6?
YES
Acquire No-Load Power-line Voltage (Vnol)
791
Store no-load voltage Vnol
792
Introduce load @A/D I/O #4
793
Acquire Line Voltage with load (Vlod)
794
795
Store load voltage Vlod
796
Is Vlod 5% < Vnol?
YES
Increase P/S output voltage
797
NO
Monitor P/S output voltage. If voltage drops to 0, shut down P/S and return to STATE #1
798

Fig. 1A-1
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Software for In-line Corded Device

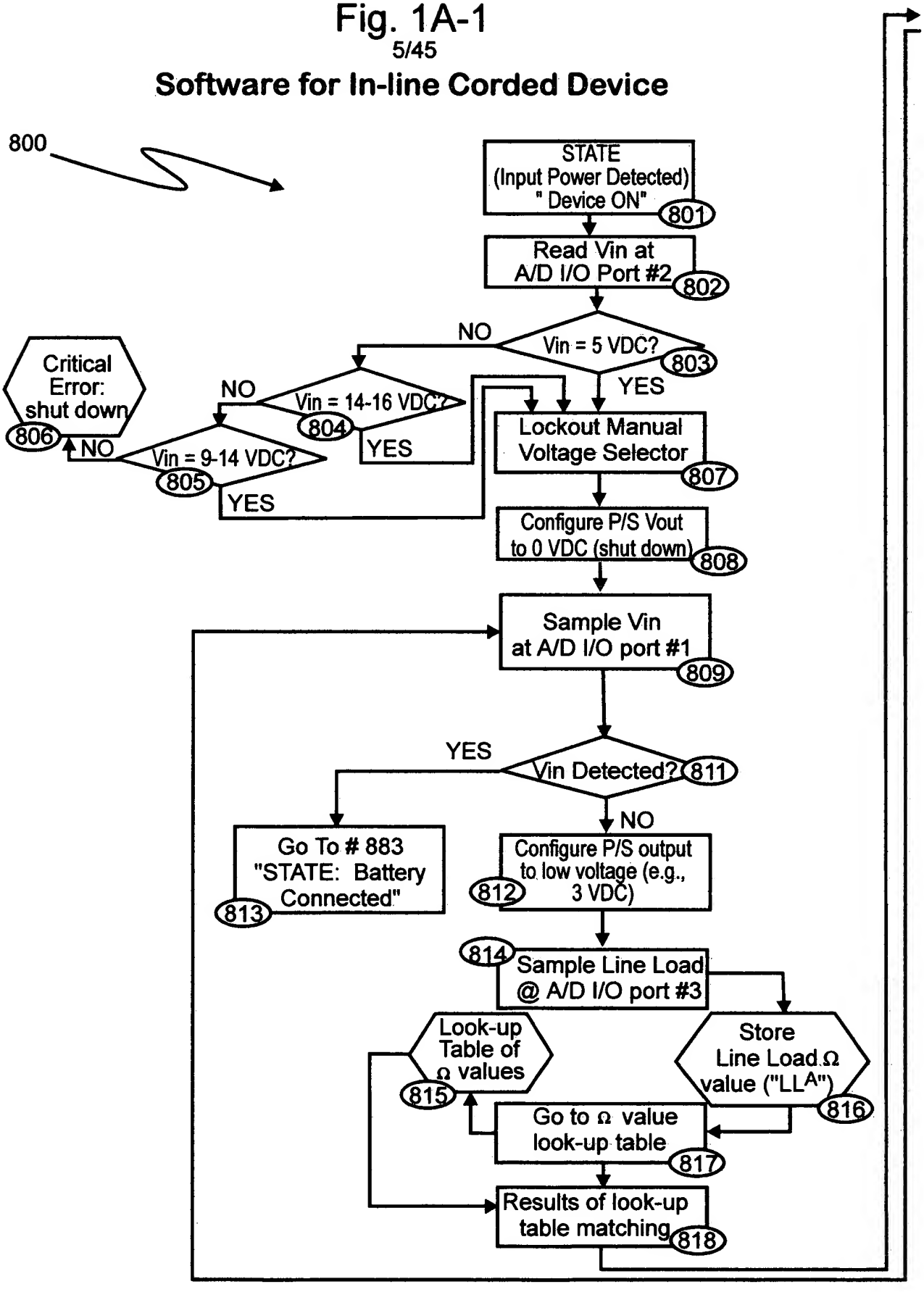

Fig. 1A-2

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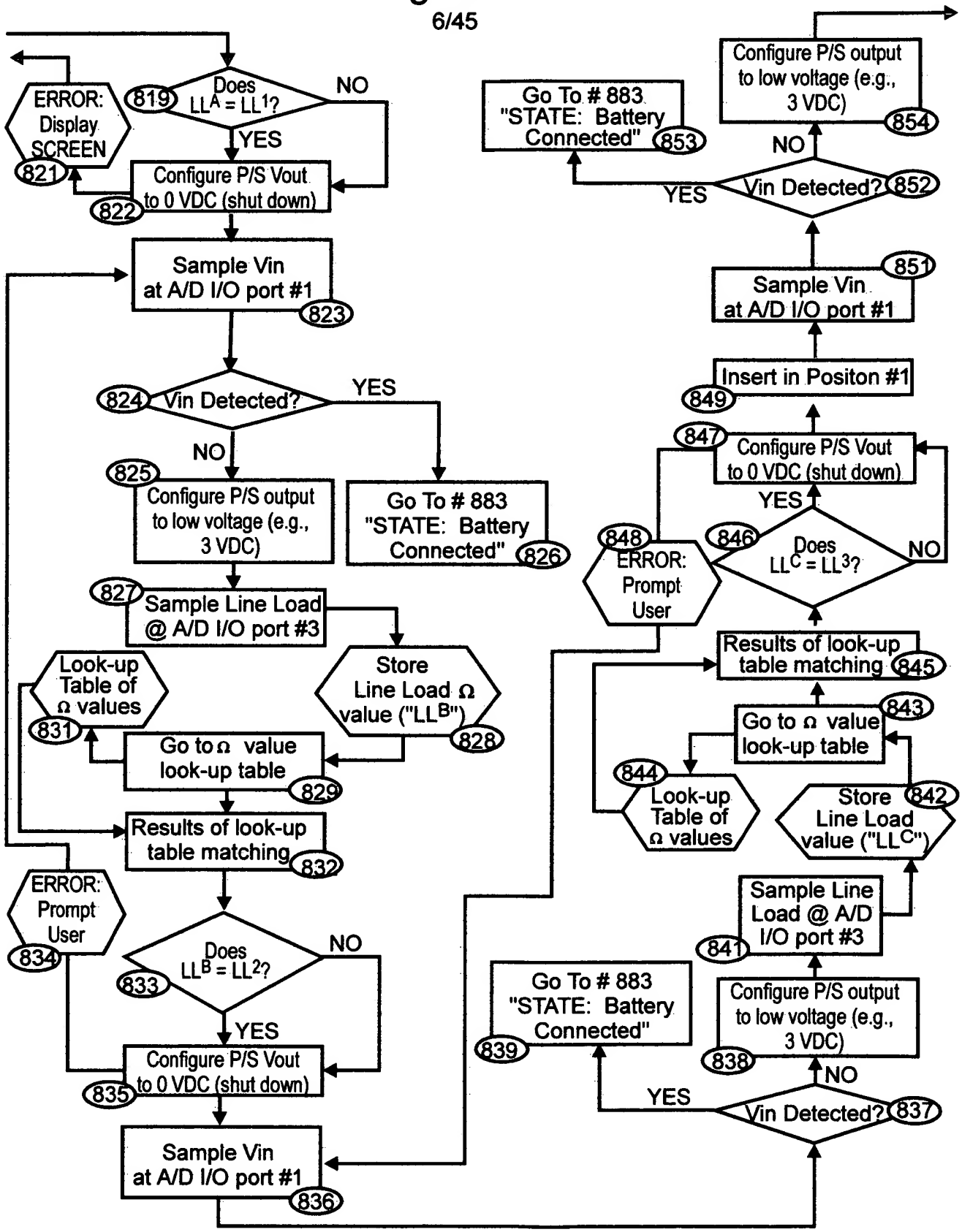
ERROR: Display SCREEN
821
819
Does LL^A = LL^1?
NO
YES
Configure P/S Vout to 0 VDC (shut down)
822
Sample Vin at A/D I/O port #1
823
824
Vin Detected?
YES
NO
825
Configure P/S output to low voltage (e.g., 3 VDC)
Go To # 883 "STATE: Battery Connected"
826
827
Sample Line Load @ A/D I/O port #3
Look-up Table of Ω values
831
Store Line Load Ω value ("LL^B")
828
Go to Ω value look-up table
829
Results of look-up table matching
832
ERROR: Prompt User
834
Does LL^B = LL^2?
833
NO
YES
Configure P/S Vout to 0 VDC (shut down)
835
Sample Vin at A/D I/O port #1
836
Go To # 883 "STATE: Battery Connected"
853
Configure P/S output to low voltage (e.g., 3 VDC)
854
NO
YES
Vin Detected?
852
851
Sample Vin at A/D I/O port #1
Insert in Positon #1
849
847
Configure P/S Vout to 0 VDC (shut down)
YES
848
ERROR: Prompt User
846
Does LL^C = LL^3?
NO
Results of look-up table matching
845
843
Go to Ω value look-up table
844
Look-up Table of Ω values
Store Line Load value ("LL^C")
842
Sample Line Load @ A/D I/O port #3
841
Go To # 883 "STATE: Battery Connected"
839
Configure P/S output to low voltage (e.g., 3 VDC)
838
NO
YES
Vin Detected?
837

Fig. 1A-3

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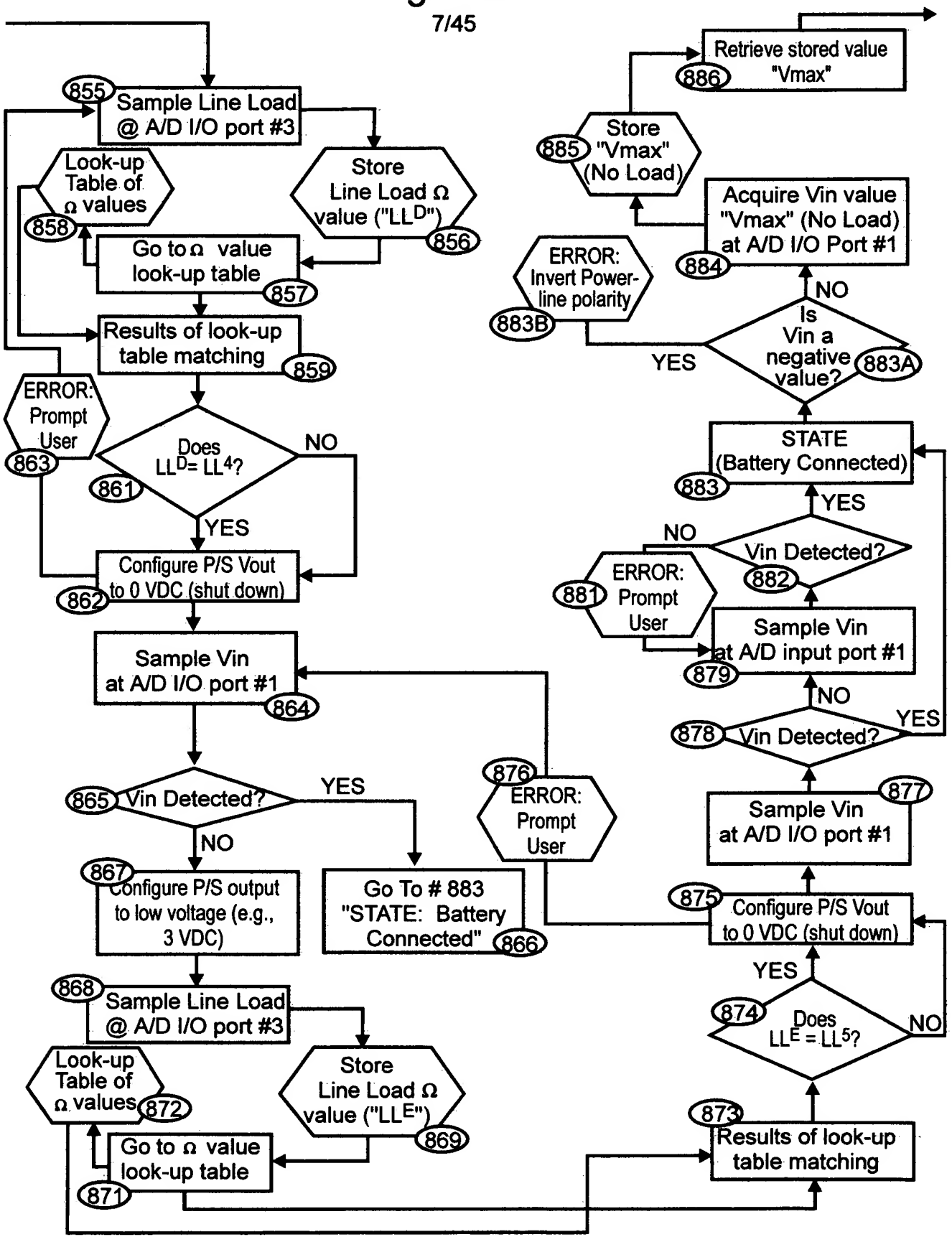
855
Sample Line Load @ A/D I/O port #3
Look-up Table of Ω values
858
Store Line Load Ω value ("LL^D")
856
Go to Ω value look-up table
857
Results of look-up table matching
859
ERROR: Prompt User
863
Does LL^D = LL^4?
861
NO
YES
Configure P/S Vout to 0 VDC (shut down)
862
Sample Vin at A/D I/O port #1
864
865 Vin Detected?
YES
NO
867
Configure P/S output to low voltage (e.g., 3 VDC)
Go To # 883 "STATE: Battery Connected"
866
876
ERROR: Prompt User
868
Sample Line Load @ A/D I/O port #3
Look-up Table of Ω values
872
Store Line Load Ω value ("LL^E")
869
Go to Ω value look-up table
871
Retrieve stored value "Vmax"
886
Store "Vmax" (No Load)
885
Acquire Vin value "Vmax" (No Load) at A/D I/O Port #1
884
ERROR: Invert Power-line polarity
883B
NO
YES
Is Vin a negative value?
883A
STATE (Battery Connected)
883
YES
NO
Vin Detected?
882
ERROR: Prompt User
881
Sample Vin at A/D input port #1
879
NO
YES
878 Vin Detected?
877
Sample Vin at A/D I/O port #1
875
Configure P/S Vout to 0 VDC (shut down)
YES
874
Does LL^E = LL^5?
NO
873
Results of look-up table matching

Fig. 1A-4

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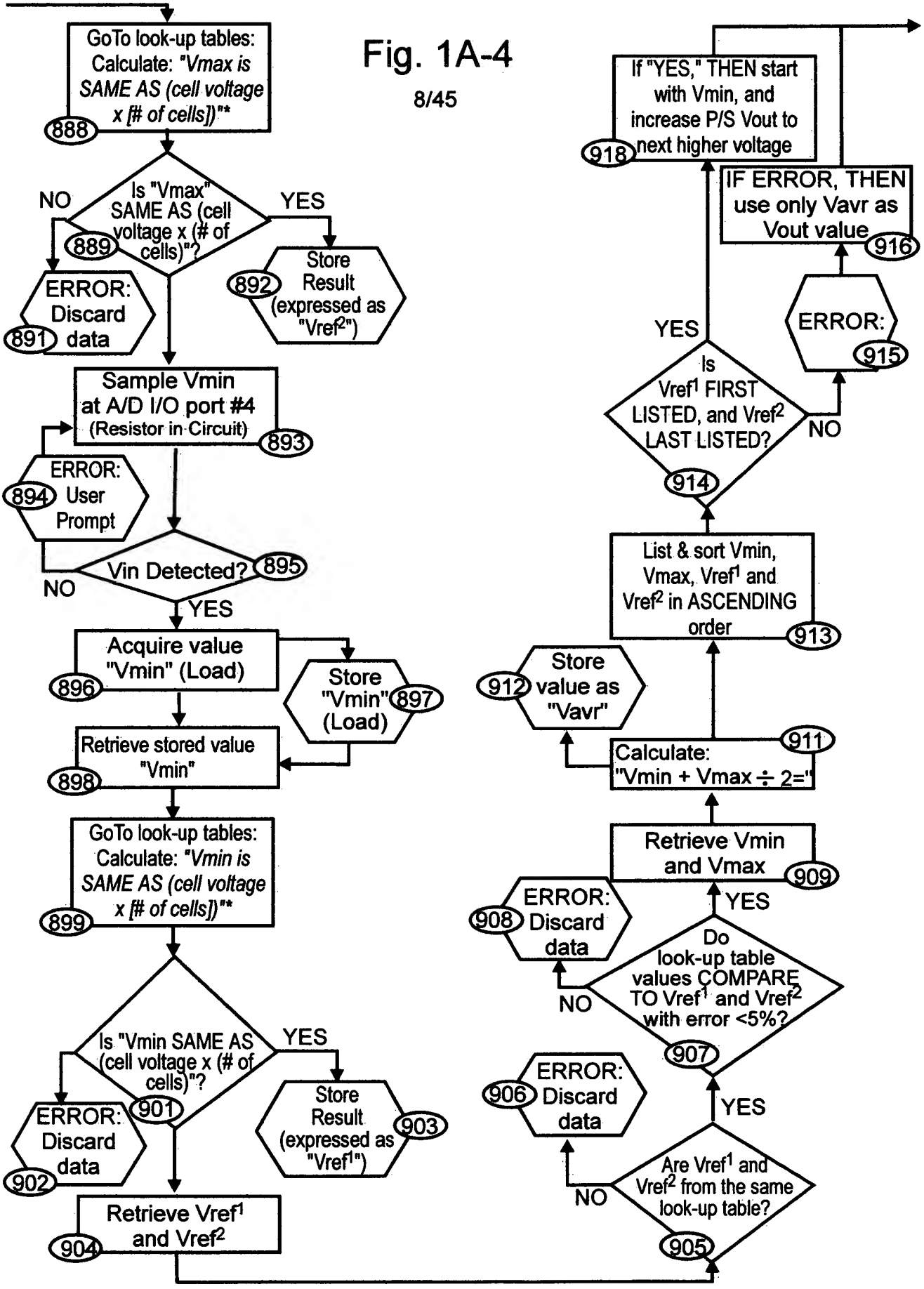
GoTo look-up tables: Calculate: "Vmax is SAME AS (cell voltage x [# of cells])"*
888
Is "Vmax" SAME AS (cell voltage x (# of cells)"?
889
NO
YES
ERROR: Discard data
891
Store Result (expressed as "Vref2")
892
Sample Vmin at A/D I/O port #4 (Resistor in Circuit)
893
ERROR: User Prompt
894
Vin Detected?
895
NO
YES
Acquire value "Vmin" (Load)
896
Store "Vmin" (Load)
897
Retrieve stored value "Vmin"
898
GoTo look-up tables: Calculate: "Vmin is SAME AS (cell voltage x [# of cells])"*
899
Is "Vmin SAME AS (cell voltage x (# of cells)"?
901
YES
ERROR: Discard data
902
Store Result (expressed as "Vref1")
903
Retrieve Vref1 and Vref2
904
Are Vref1 and Vref2 from the same look-up table?
905
NO
YES
ERROR: Discard data
906
Do look-up table values COMPARE TO Vref1 and Vref2 with error <5%?
907
NO
YES
ERROR: Discard data
908
Retrieve Vmin and Vmax
909
Calculate: "Vmin + Vmax ÷ 2="
911
Store value as "Vavr"
912
List & sort Vmin, Vmax, Vref1 and Vref2 in ASCENDING order
913
Is Vref1 FIRST LISTED, and Vref2 LAST LISTED?
914
NO
YES
ERROR:
915
IF ERROR, THEN use only Vavr as Vout value
916
If "YES," THEN start with Vmin, and increase P/S Vout to next higher voltage
918

Fig. 1A-5

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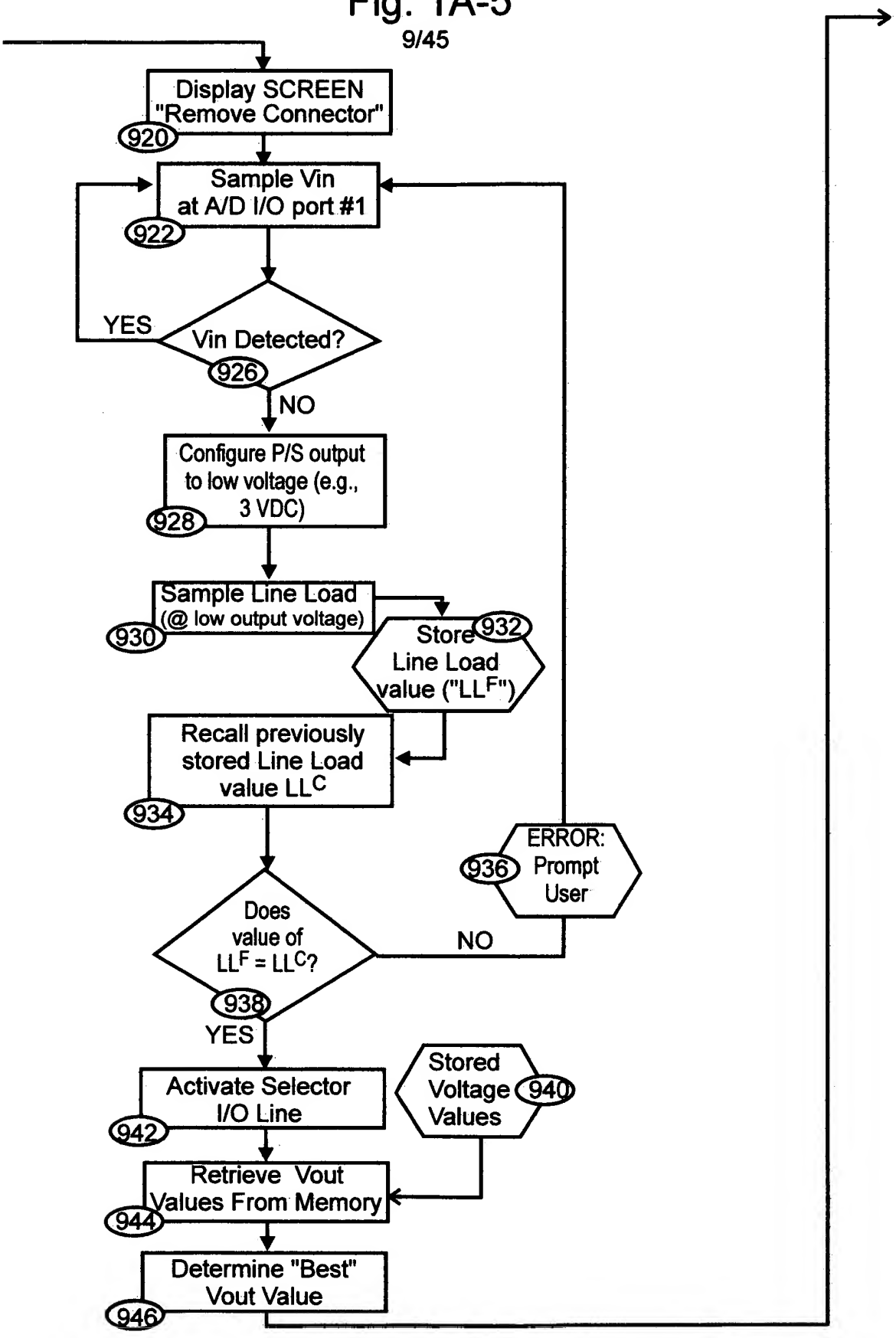
Display SCREEN "Remove Connector"
920
Sample Vin at A/D I/O port #1
922
YES
Vin Detected?
926
NO
Configure P/S output to low voltage (e.g., 3 VDC)
928
Sample Line Load (@ low output voltage)
930
Store Line Load value ("LL^F")
932
Recall previously stored Line Load value LL^C
934
ERROR: Prompt User
936
Does value of LL^F = LL^C?
938
NO
YES
Activate Selector I/O Line
942
Stored Voltage Values
940
Retrieve Vout Values From Memory
944
Determine "Best" Vout Value
946

Fig. 1A-6

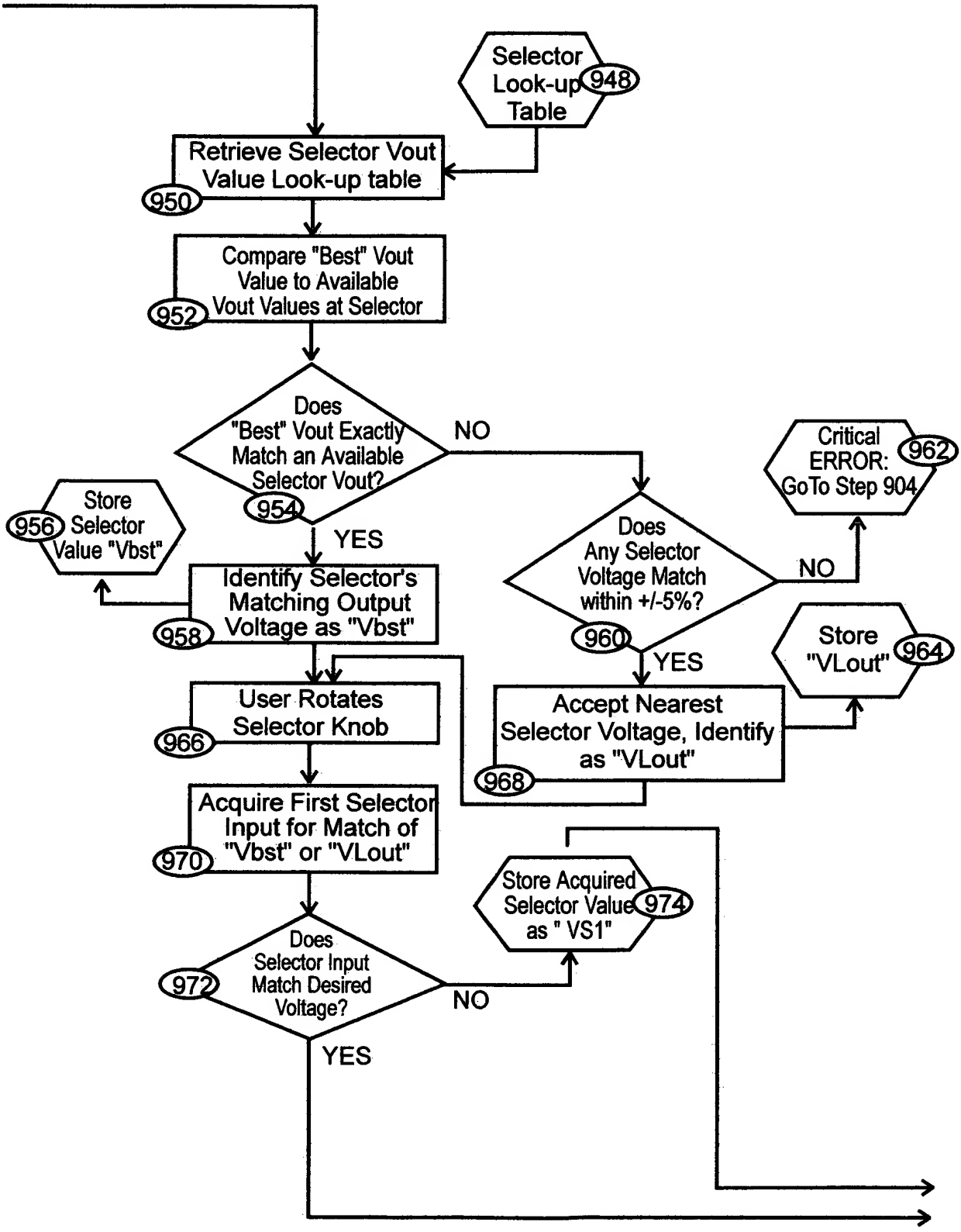
Selector Look-up Table 948
Retrieve Selector Vout Value Look-up table 950
Compare "Best" Vout Value to Available Vout Values at Selector 952
Does "Best" Vout Exactly Match an Available Selector Vout? 954
NO
YES
Store Selector Value "Vbst" 956
Identify Selector's Matching Output Voltage as "Vbst" 958
Does Any Selector Voltage Match within +/-5%? 960
NO
Critical ERROR: GoTo Step 904 962
YES
Store "VLout" 964
Accept Nearest Selector Voltage, Identify as "VLout" 968
User Rotates Selector Knob 966
Acquire First Selector Input for Match of "Vbst" or "VLout" 970
Store Acquired Selector Value as " VS1" 974
Does Selector Input Match Desired Voltage? 972
NO
YES

Fig. 1A-7

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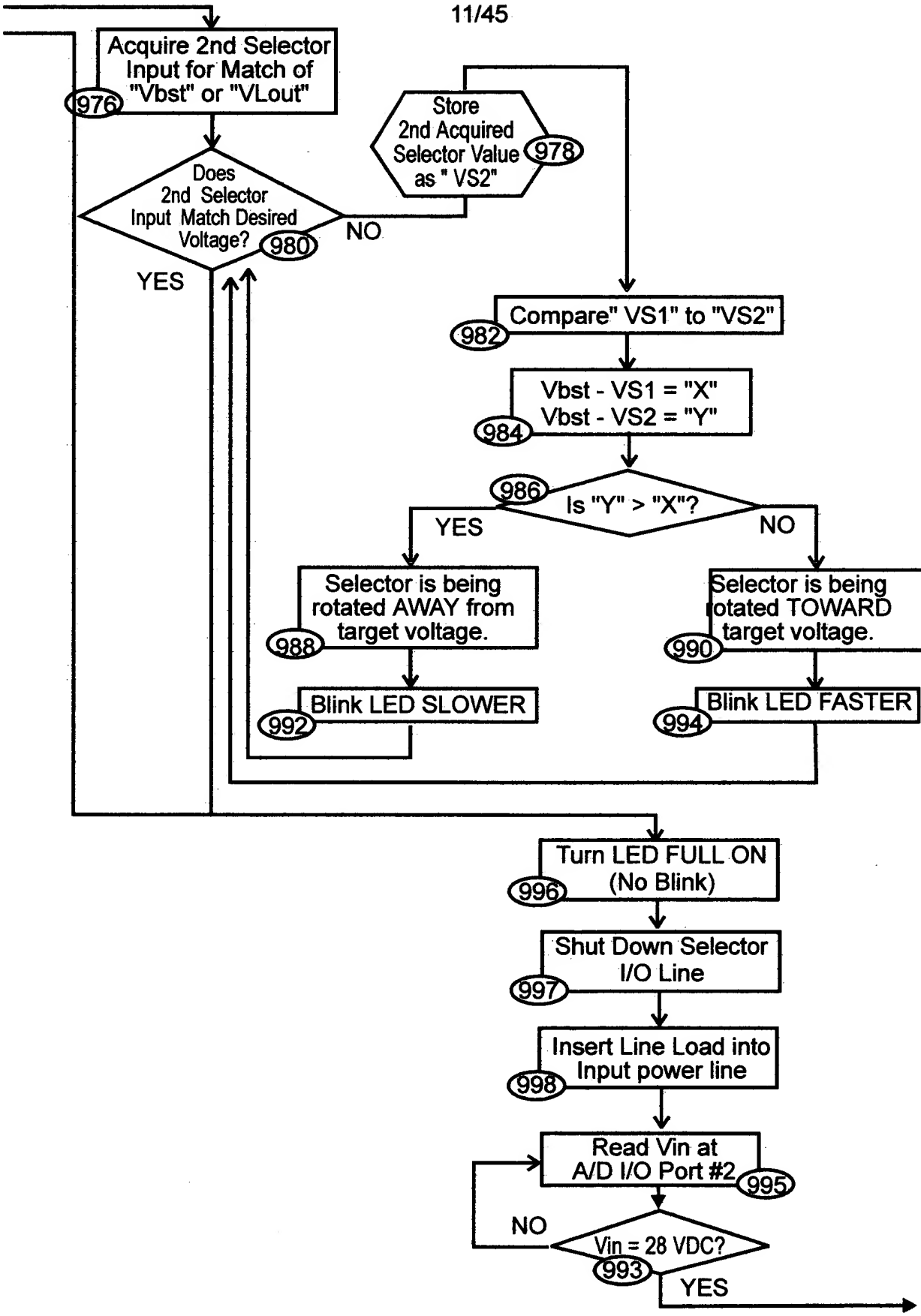
Acquire 2nd Selector Input for Match of "Vbst" or "VLout"
976
Store 2nd Acquired Selector Value as " VS2"
978
Does 2nd Selector Input Match Desired Voltage?
980
NO
YES
Compare" VS1" to "VS2"
982
Vbst - VS1 = "X"
Vbst - VS2 = "Y"
984
986
Is "Y" > "X"?
YES
NO
Selector is being rotated AWAY from target voltage.
988
Selector is being rotated TOWARD target voltage.
990
Blink LED SLOWER
992
Blink LED FASTER
994
Turn LED FULL ON (No Blink)
996
Shut Down Selector I/O Line
997
Insert Line Load into Input power line
998
Read Vin at A/D I/O Port #2
995
NO
Vin = 28 VDC?
993
YES

Fig. 1A-8

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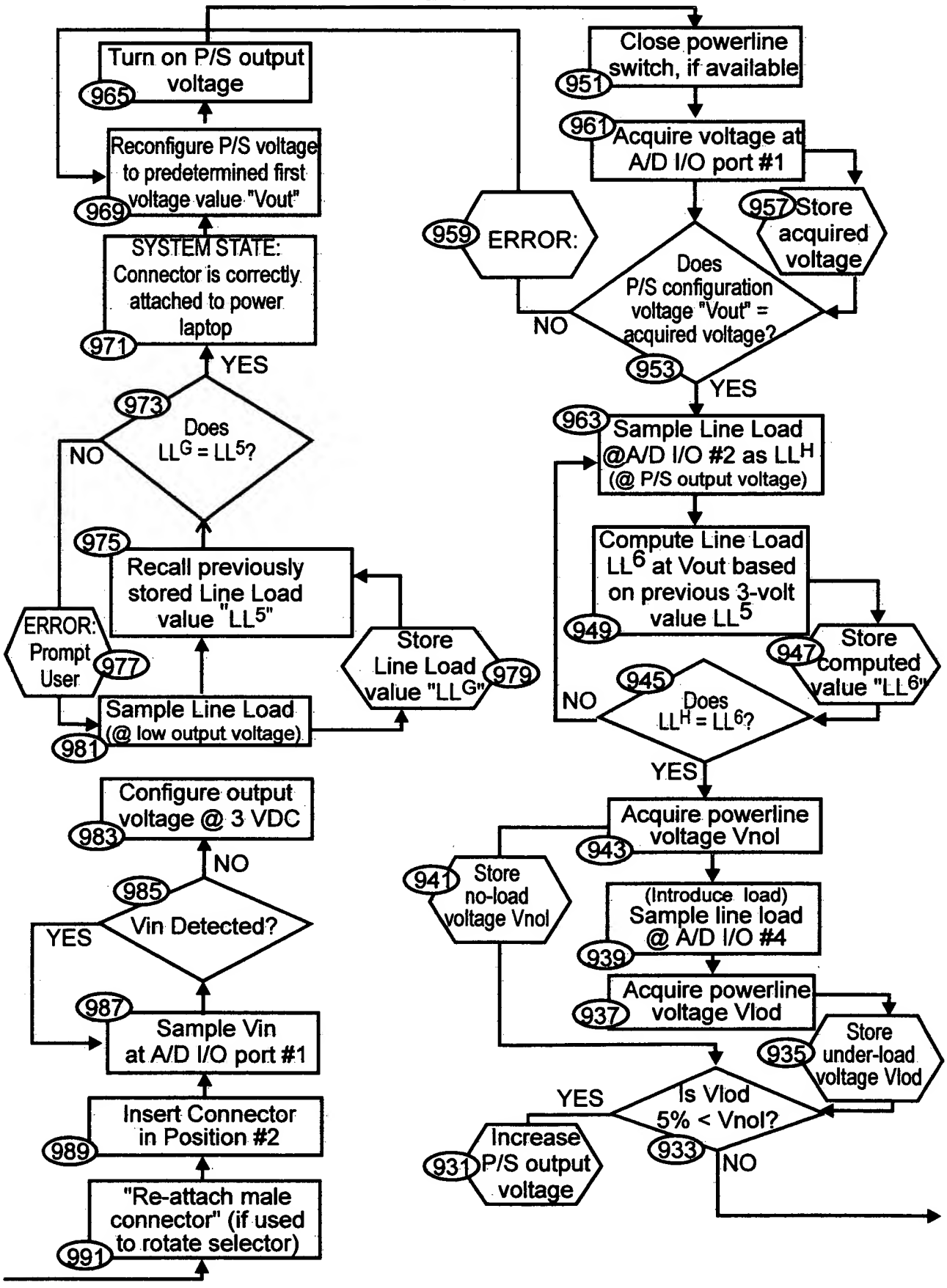
Close powerline switch, if available
951
Acquire voltage at A/D I/O port #1
961
Store acquired voltage
957
ERROR:
959
Does P/S configuration voltage "Vout" = acquired voltage?
NO
YES
953
Sample Line Load @A/D I/O #2 as LL^H (@ P/S output voltage)
963
Compute Line Load LL^6 at Vout based on previous 3-volt value LL^5
949
Store computed value "LL^6"
947
Does LL^H = LL^6?
945
NO
YES
Acquire powerline voltage Vnol
943
Store no-load voltage Vnol
941
(Introduce load) Sample line load @ A/D I/O #4
939
Acquire powerline voltage Vlod
937
Store under-load voltage Vlod
935
Is Vlod 5% < Vnol?
933
YES
NO
Increase P/S output voltage
931
Turn on P/S output voltage
965
Reconfigure P/S voltage to predetermined first voltage value "Vout"
969
SYSTEM STATE: Connector is correctly attached to power laptop
971
YES
Does LL^G = LL^5?
973
NO
Recall previously stored Line Load value "LL^5"
975
ERROR: Prompt User
977
Store Line Load value "LL^G"
979
Sample Line Load (@ low output voltage)
981
Configure output voltage @ 3 VDC
983
NO
Vin Detected?
985
YES
Sample Vin at A/D I/O port #1
987
Insert Connector in Position #2
989
"Re-attach male connector" (if used to rotate selector)
991

Fig. 1A-9

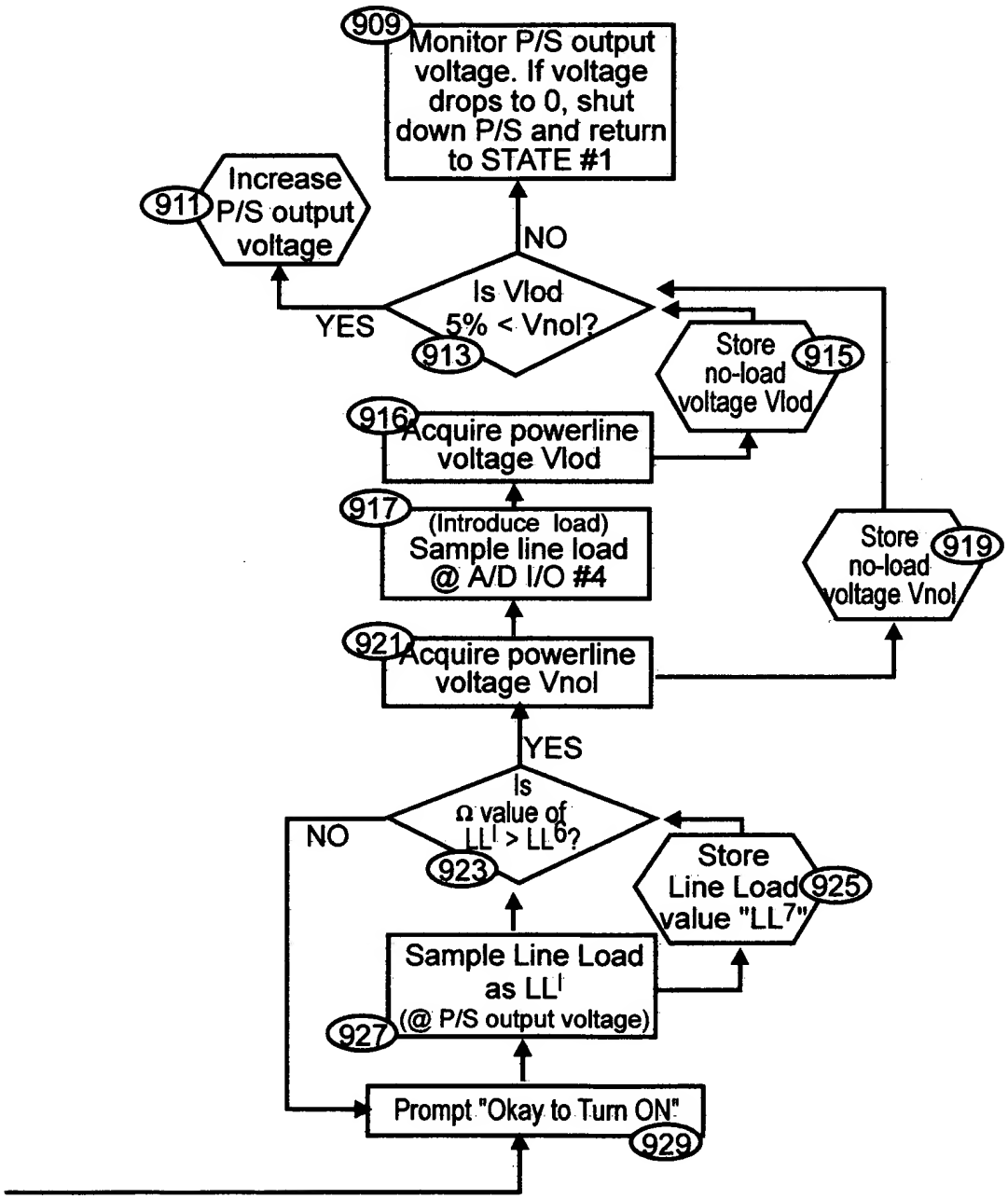
909
Monitor P/S output voltage. If voltage drops to 0, shut down P/S and return to STATE #1
NO
Is Vlod 5% < Vnol?
913
YES
911
Increase P/S output voltage
Store no-load voltage Vlod
915
916
Acquire powerline voltage Vlod
917
(Introduce load) Sample line load @ A/D I/O #4
Store no-load voltage Vnol
919
921
Acquire powerline voltage Vnol
YES
Is Ω value of LL^I > LL^6?
923
NO
Store Line Load value "LL^7"
925
Sample Line Load as LL^I (@ P/S output voltage)
927
Prompt "Okay to Turn ON"
929

Fig. 2

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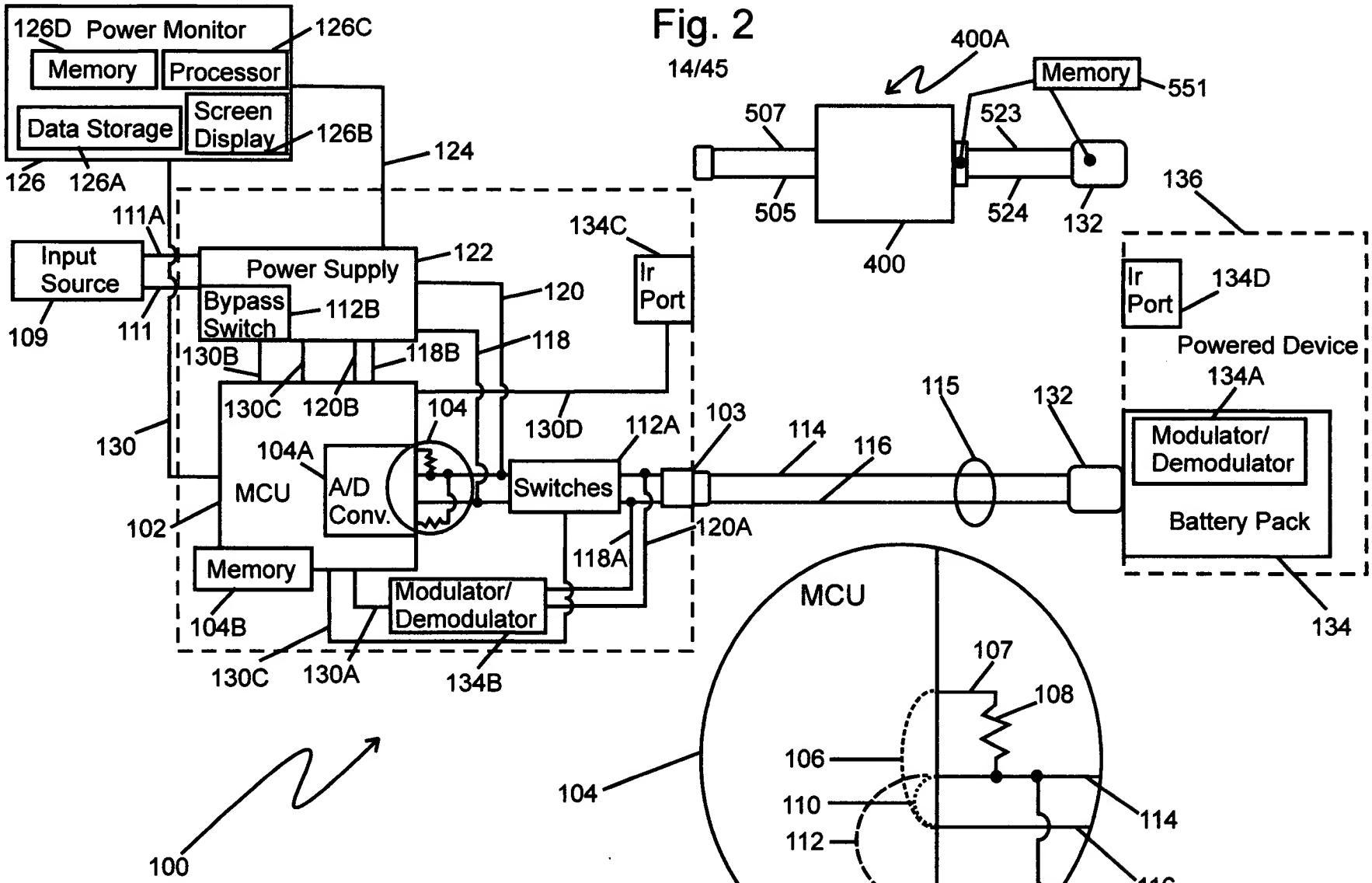

Fig. 2A

Fig. 2B

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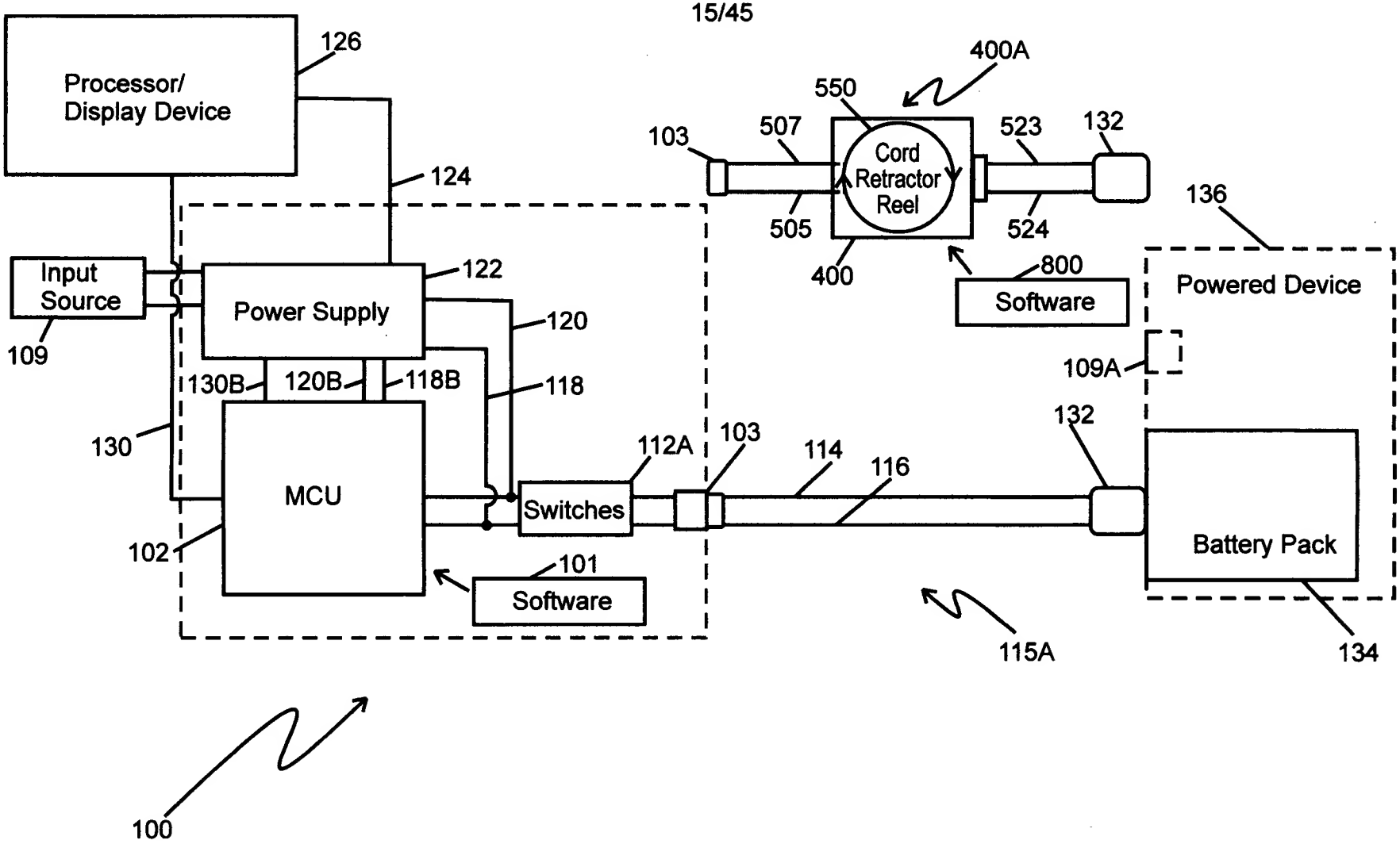

Processor/
Display Device
126
124
Input
Source
109
Power Supply
122
120
130B
120B
118B
118
130
MCU
102
100
Switches
112A
103
114
116
101
Software
115A
400A
550
507
103
Cord
Retractor
Reel
523
132
505
524
400
800
Software
136
Powered Device
109A
132
Battery Pack
134

Fig. 3A
(Prior Art)
16/45

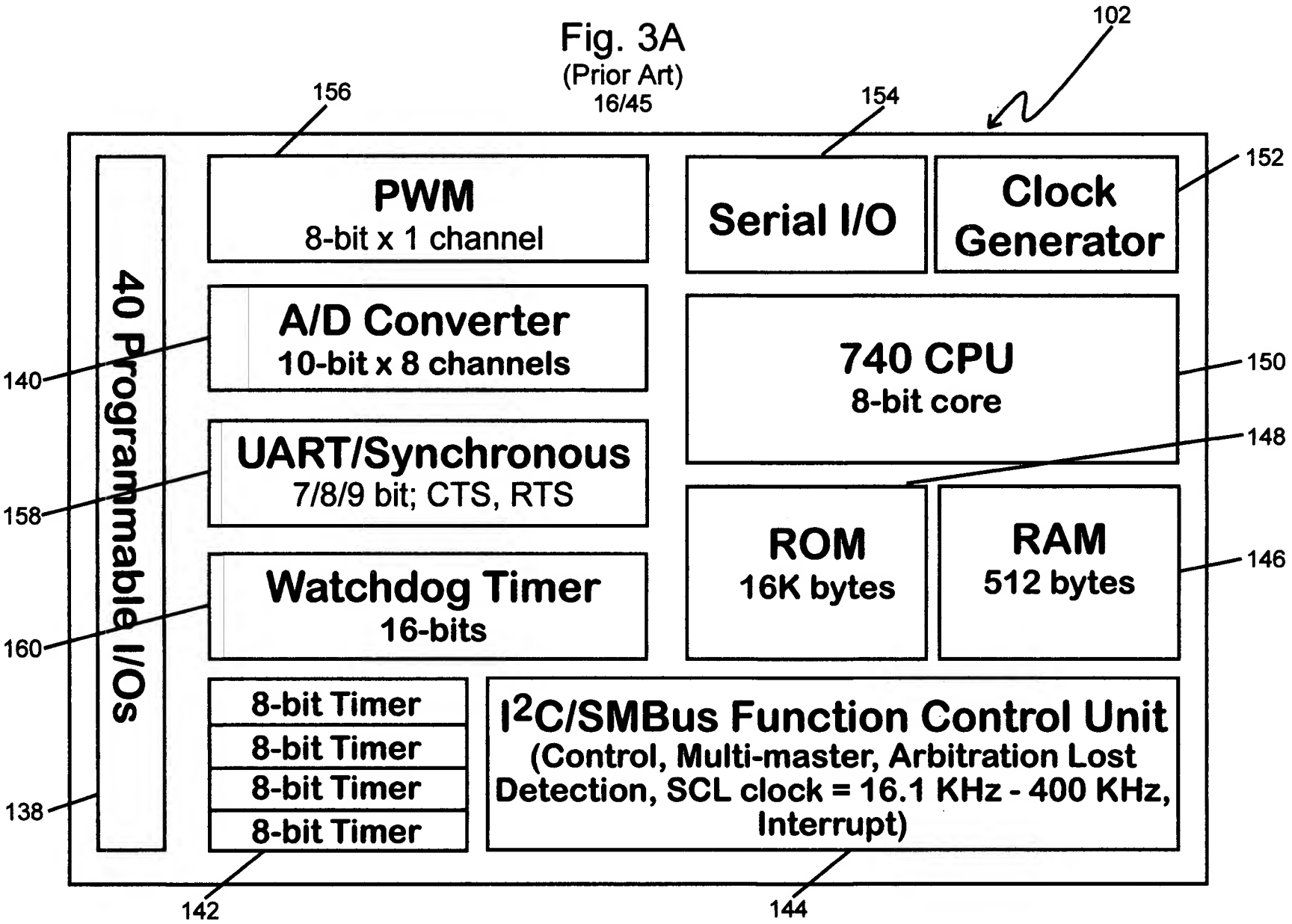


Fig. 3B
(Prior Art)
17/45

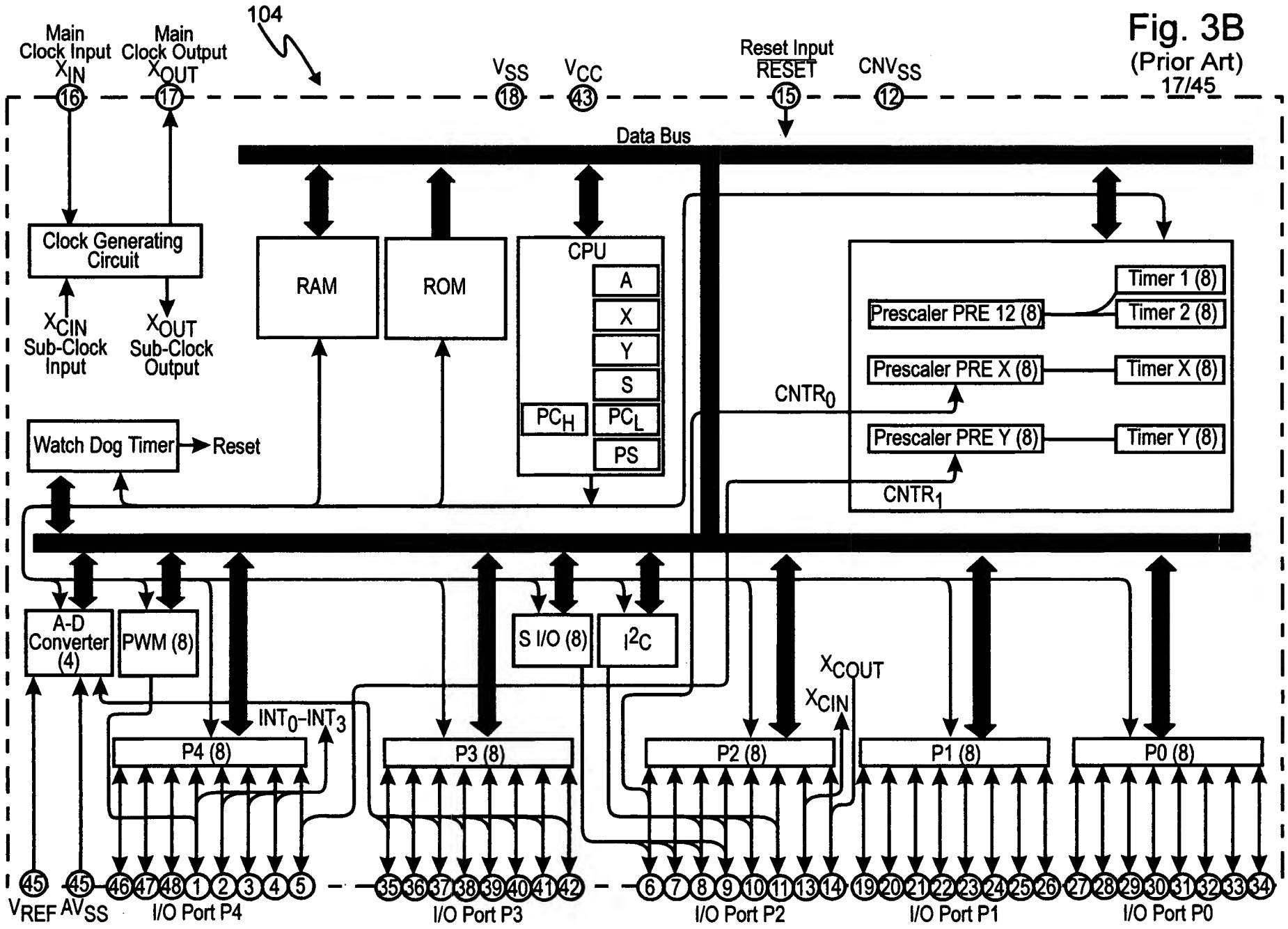


Fig. 4-1
(Prior Art)
18/45

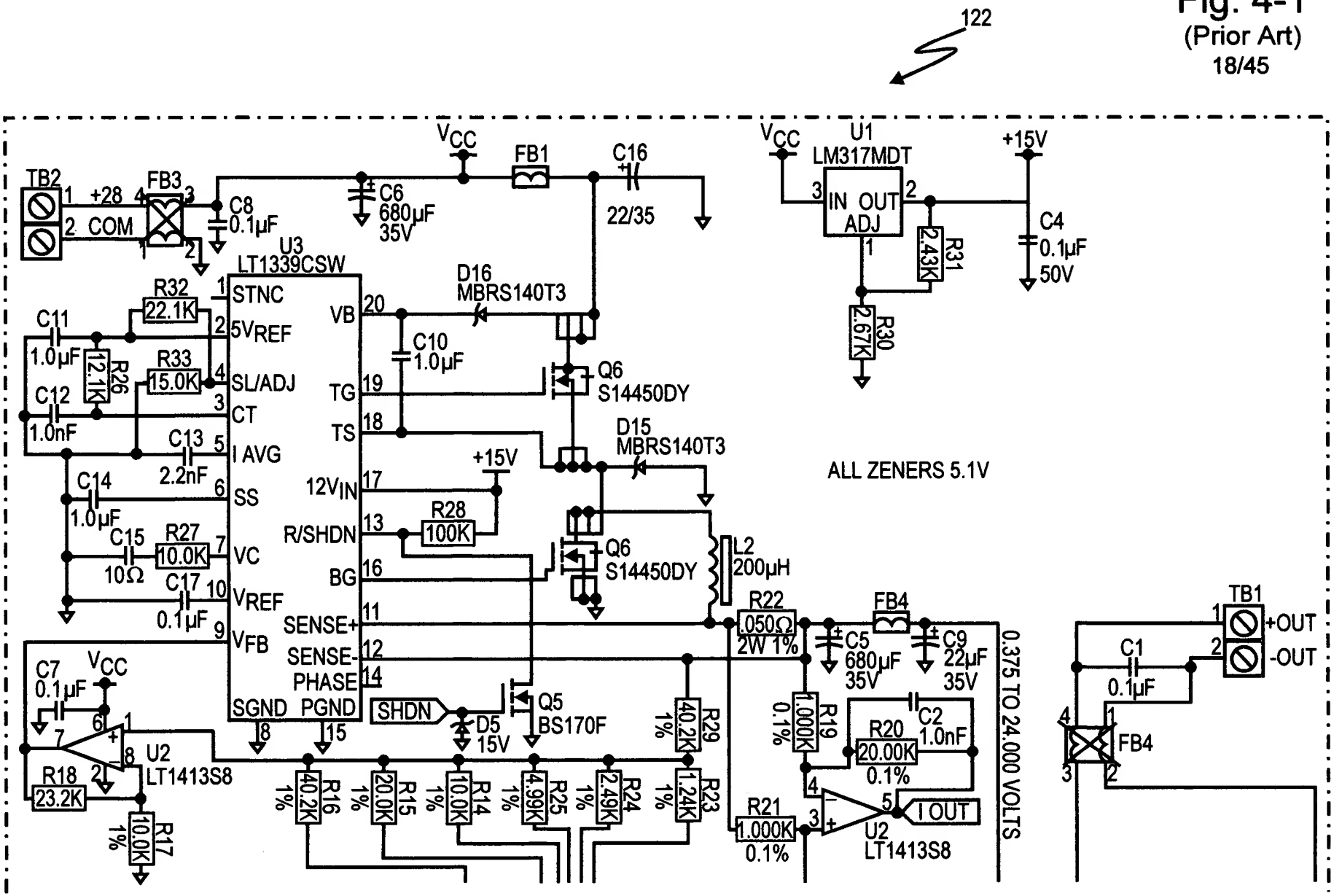
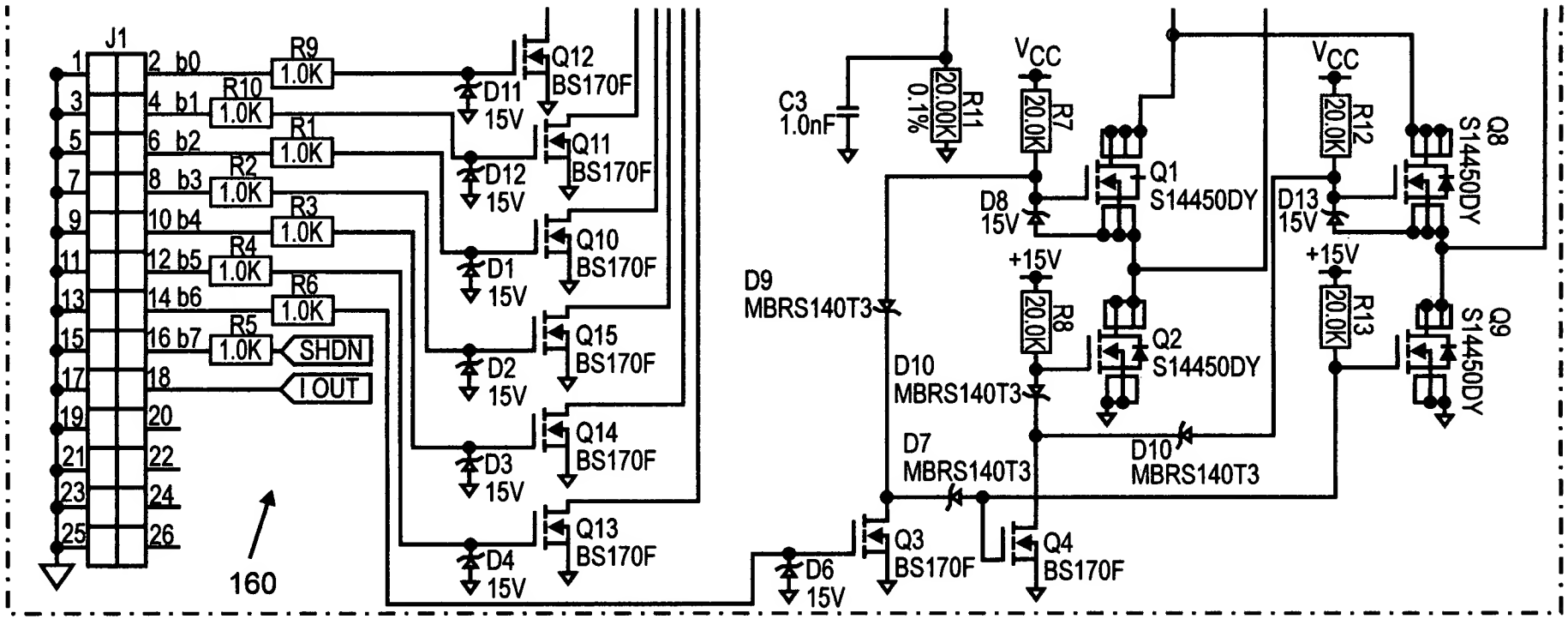


Fig. 4-2
(Prior Art)
19/45



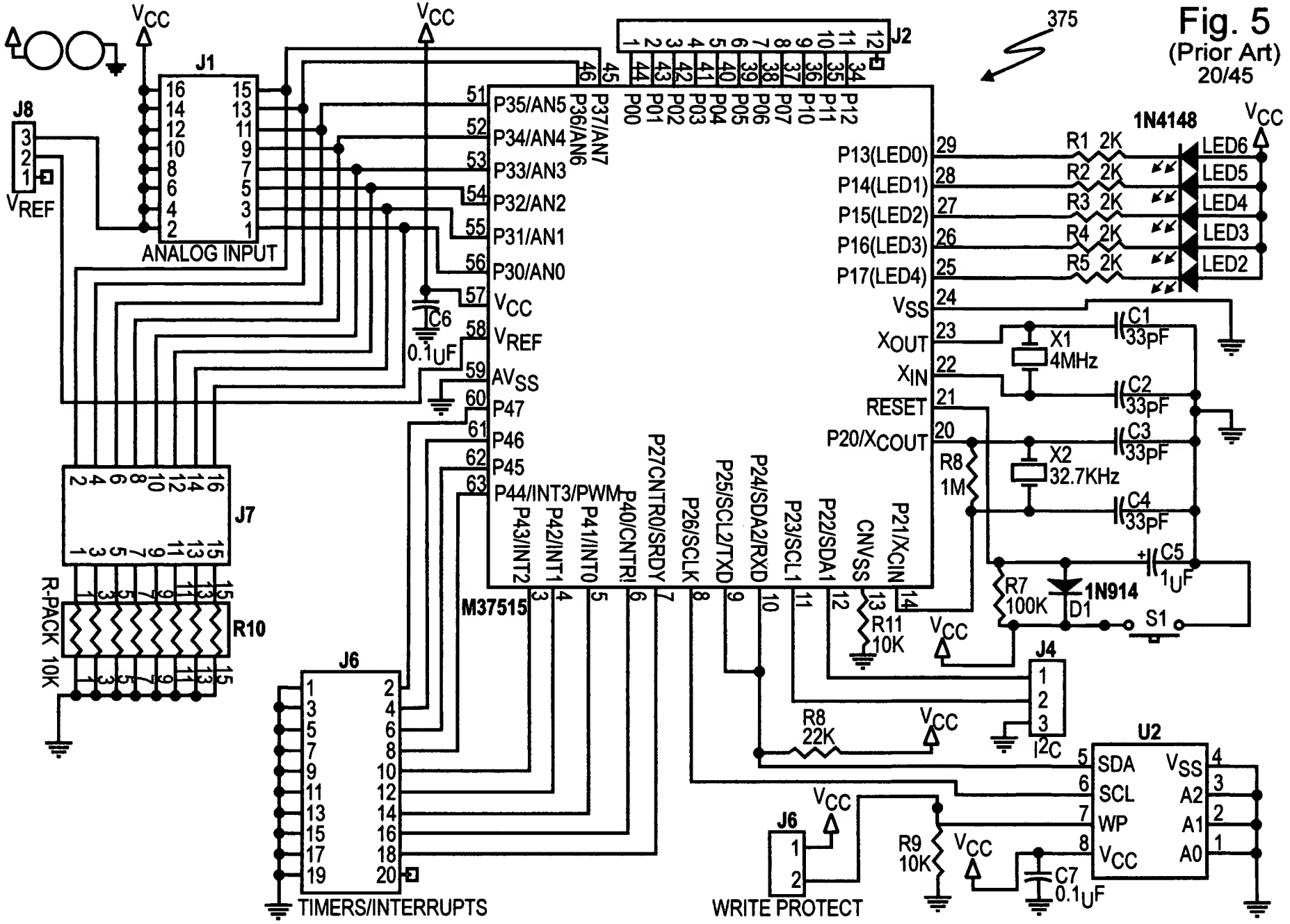


Fig. 5
(Prior Art)
20/45
375
M37515
J1
ANALOG INPUT
J2
J4
I2C
J6
TIMERS/INTERRUPTS
J6
WRITE PROTECT
J7
J8
R-PACK 10K
R10
U2
SDA
SCL
WP
VCC
VSS
A2
A1
A0
P35/AN5
P34/AN4
P33/AN3
P32/AN2
P31/AN1
P30/AN0
P47
P46
P45
P44/INT3/PWM
P43/INT2
P42/INT1
P41/INT0
P40/CNTR!
P27CNTR0/SRDY
P26/SCLK
P25/SCL2/TXD
P24/SDA2/RXD
P23/SCL1
P22/SDA1
CNVSS
P21/XCIN
P20/XCOUT
RESET
XIN
XOUT
P13(LED0)
P14(LED1)
P15(LED2)
P16(LED3)
P17(LED4)
1N4148
LED6
LED5
LED4
LED3
LED2
R1 2K
R2 2K
R3 2K
R4 2K
R5 2K
X1
4MHz
X2
32.7KHz
C1
33pF
C2
33pF
C3
33pF
C4
33pF
C5
1uF
C6
0.1uF
C7
0.1uF
R7
100K
1N914
D1
S1
R8
1M
R8
22K
R9
10K
R11
10K

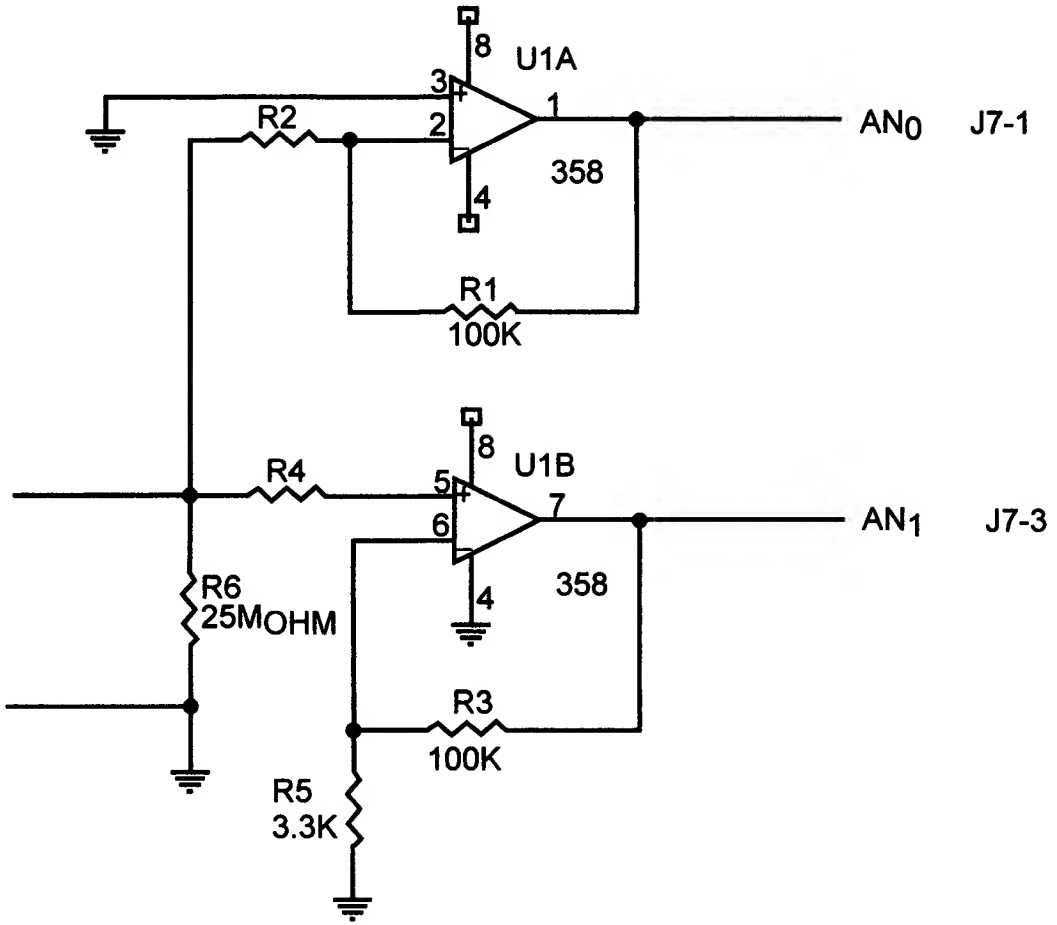


Fig. 5A
(Prior Art)

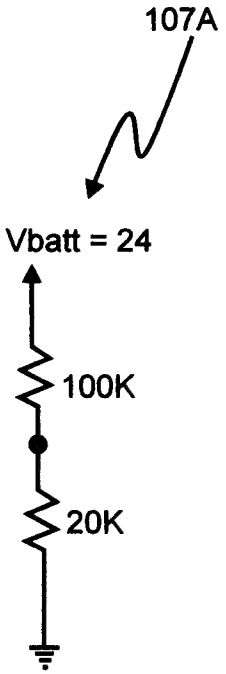
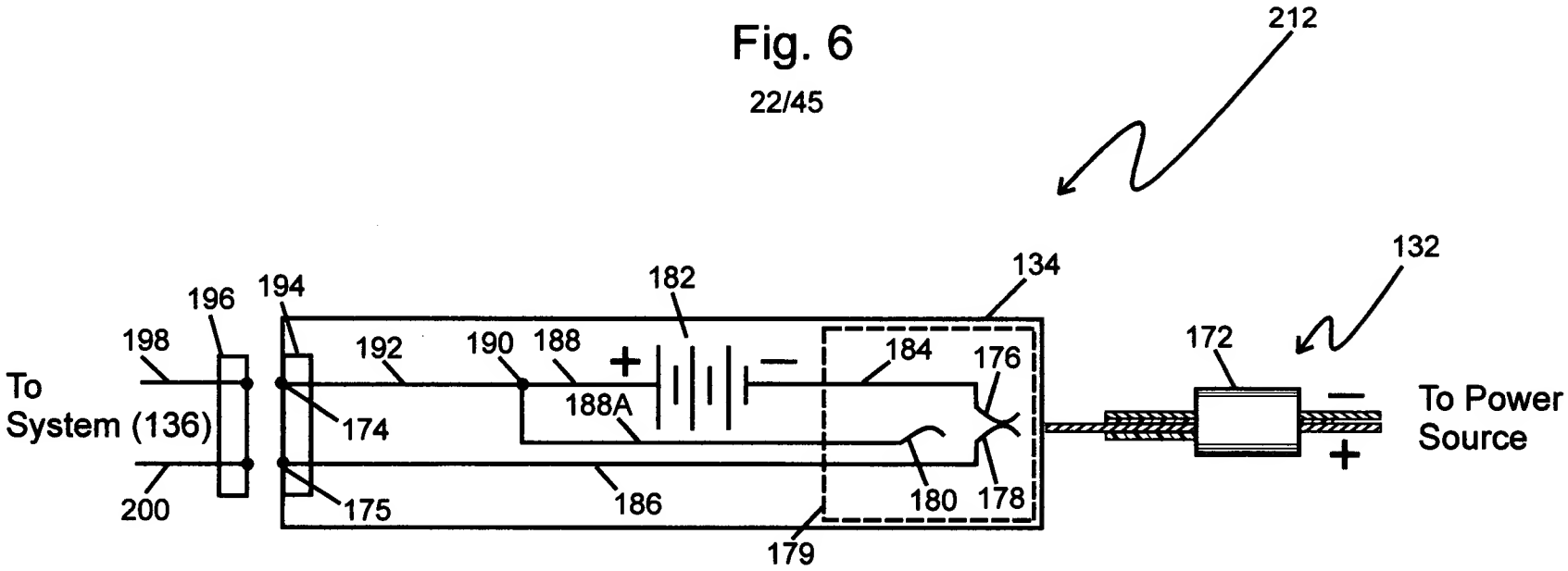


Fig. 6


212
132
134
182
196
194
198
192
190
188
184
176
172
To
System (136)
188A
174
To Power
Source
200
175
186
180
178
179

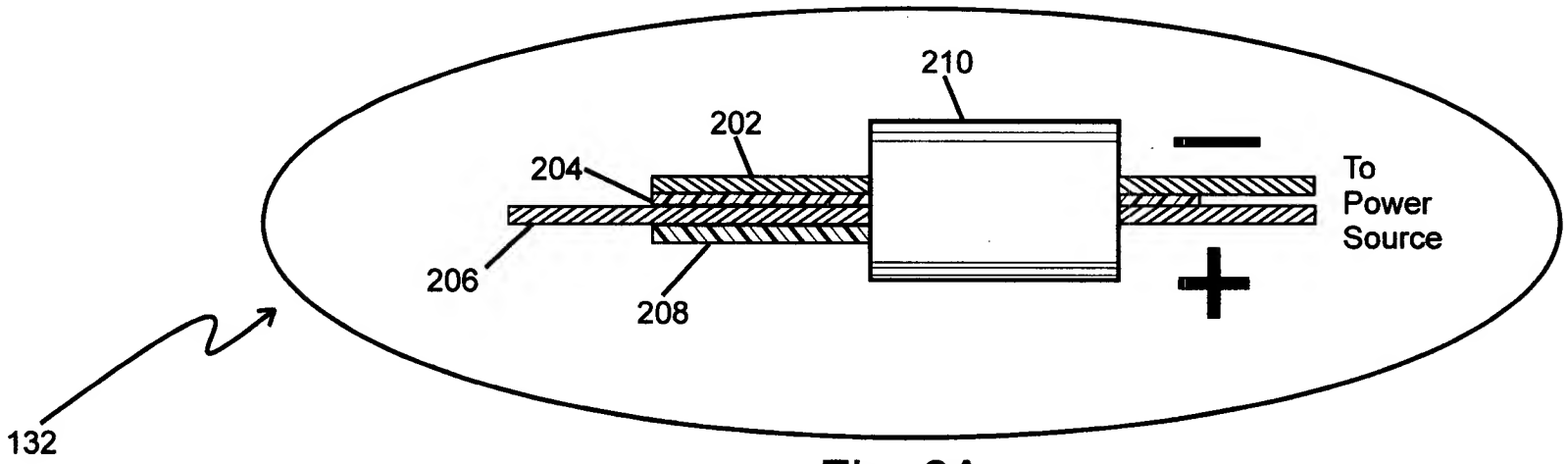

210
202
204
206
208
To
Power
Source
132

Fig. 6A

Fig. 6B

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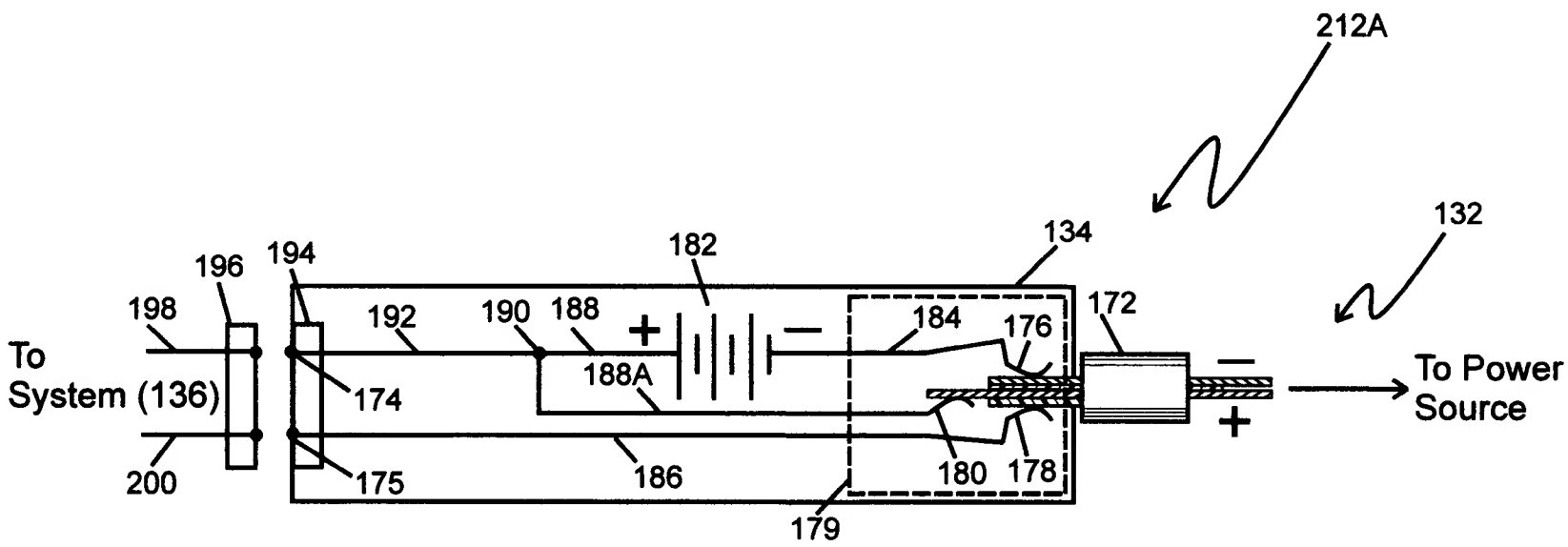
212A
132
134
182
196
194
198
192
190
188
172
184
176
To
System (136)
174
188A
To Power
Source
200
175
186
180
178
179

Fig. 6C

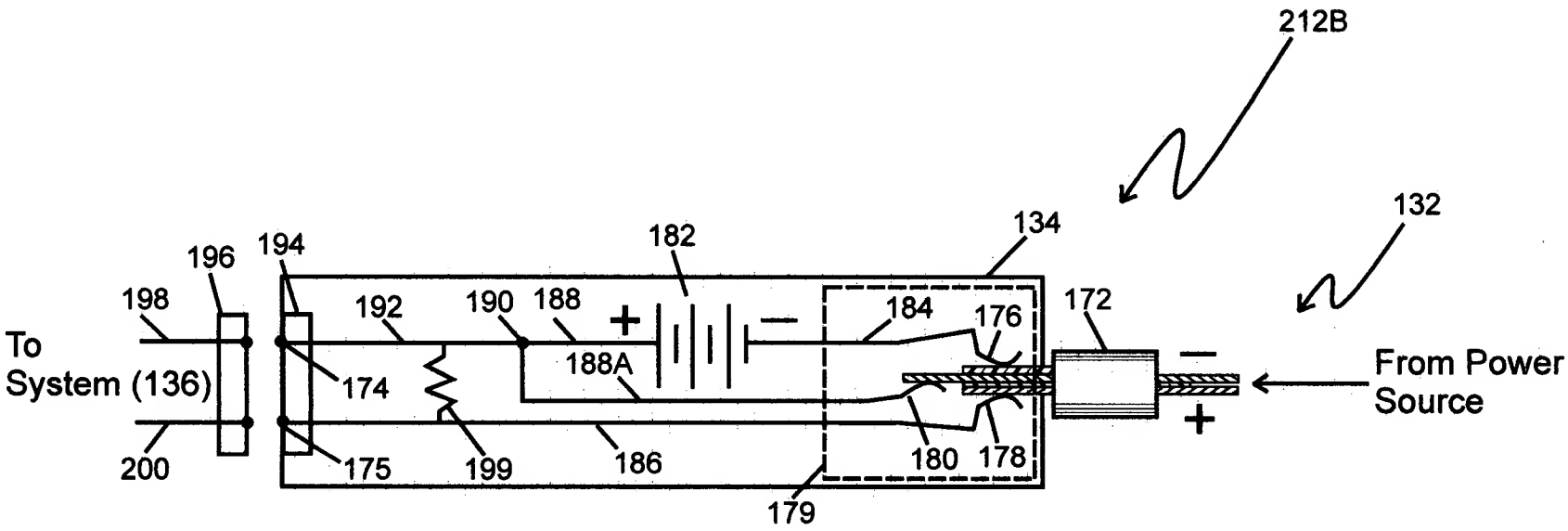
212B
132
134
182
196
194
198
192
190
188
184
176
172
To
System (136)
174
188A
From Power
Source
200
175
199
186
180
178
179

Fig. 6D

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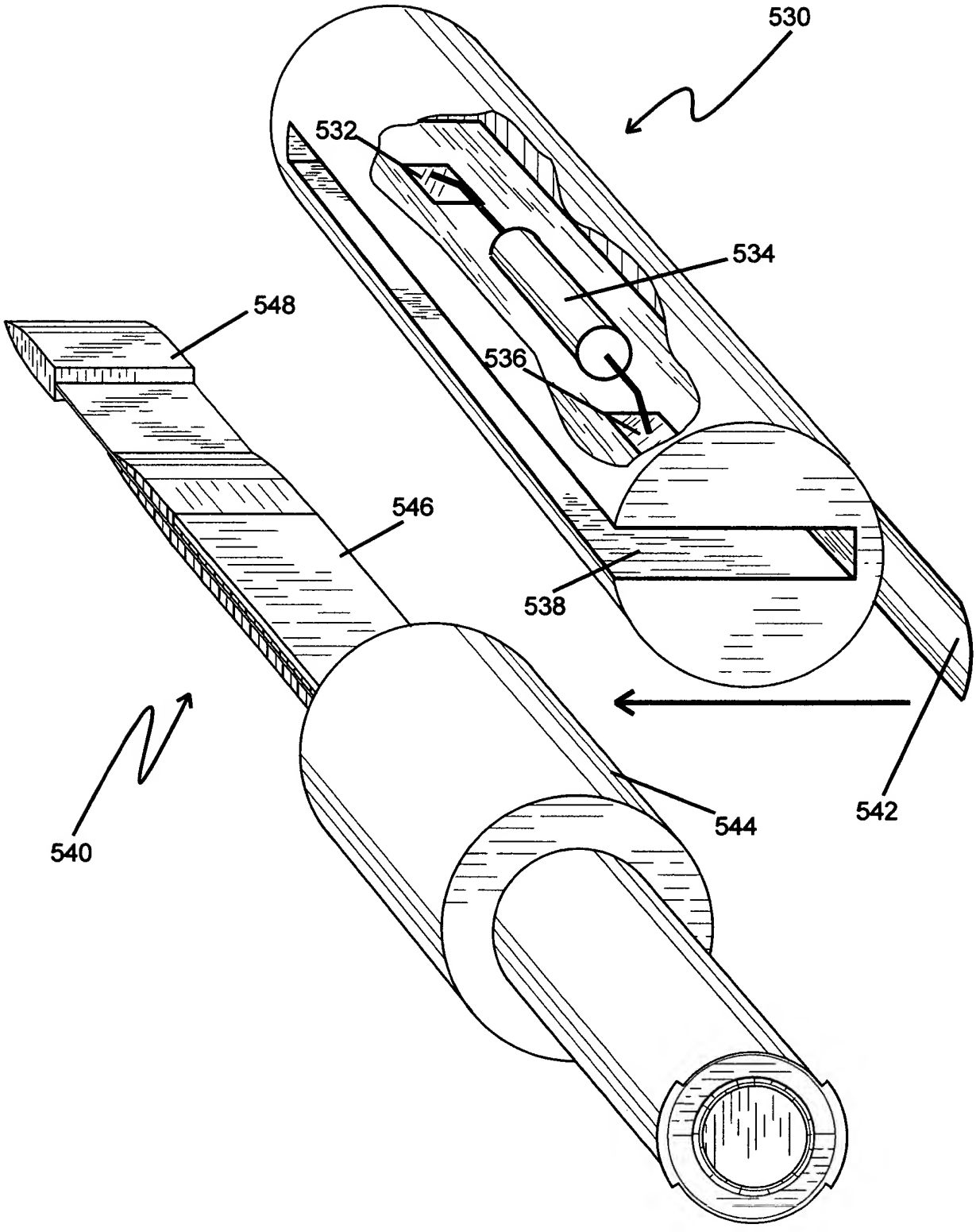

Fig. 6E

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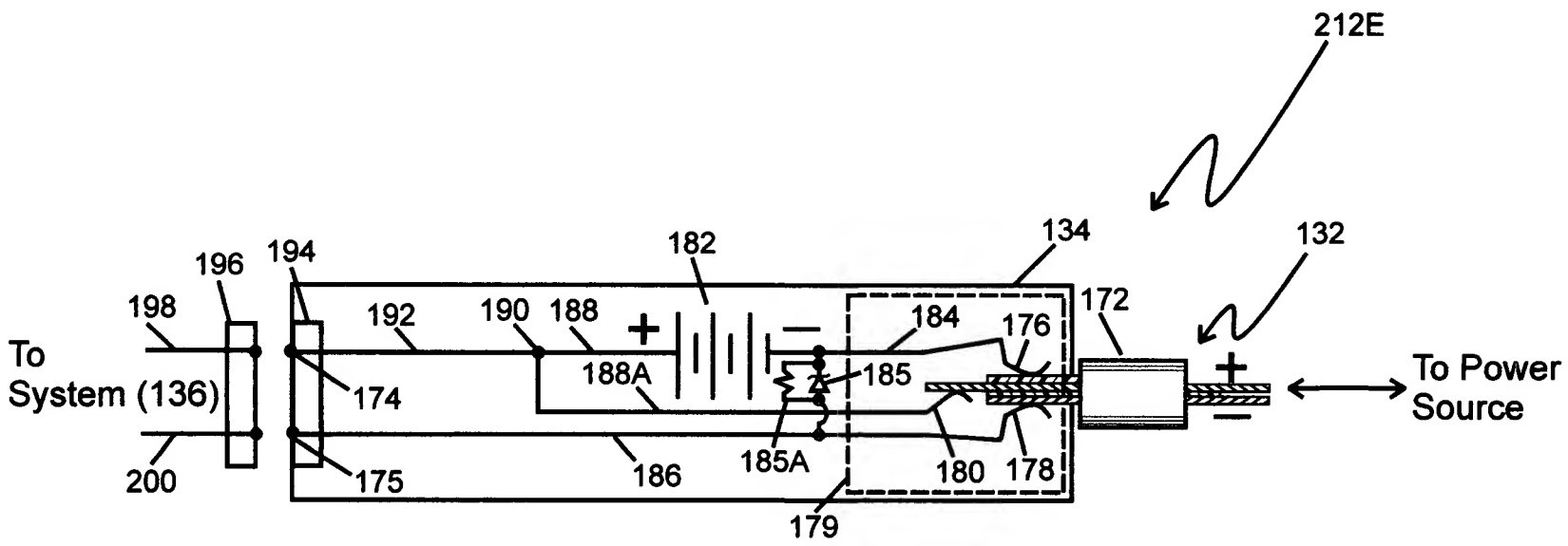
212E
134
132
182
196
194
198
192
190
188
172
184
176
To
System (136)
174
188A
185
To Power
Source
200
175
186
185A
180
178
179

Fig. 6F

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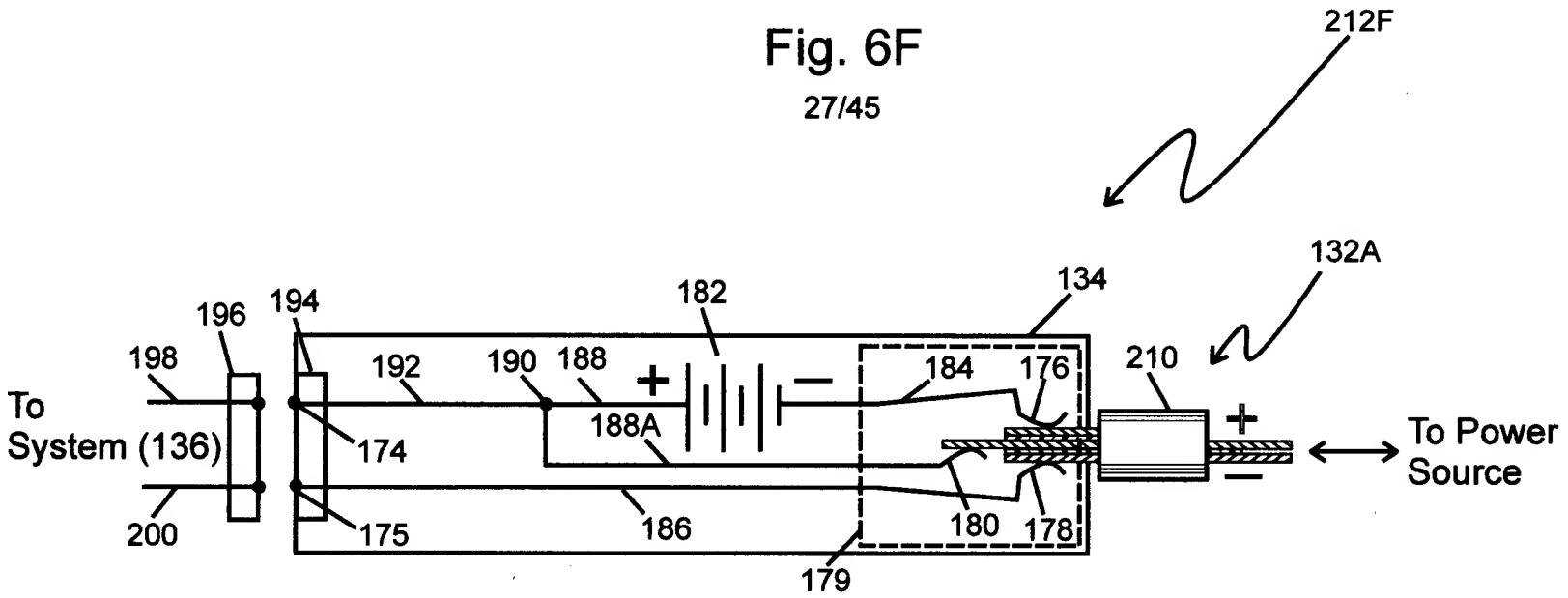

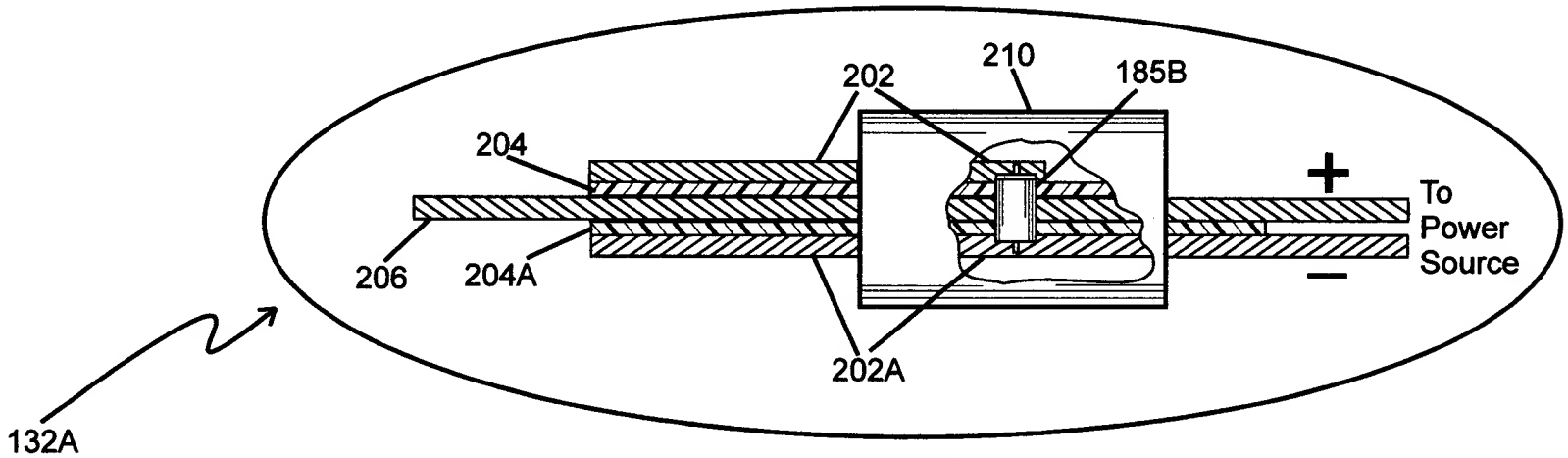

Fig. 6F-1

Fig. 7

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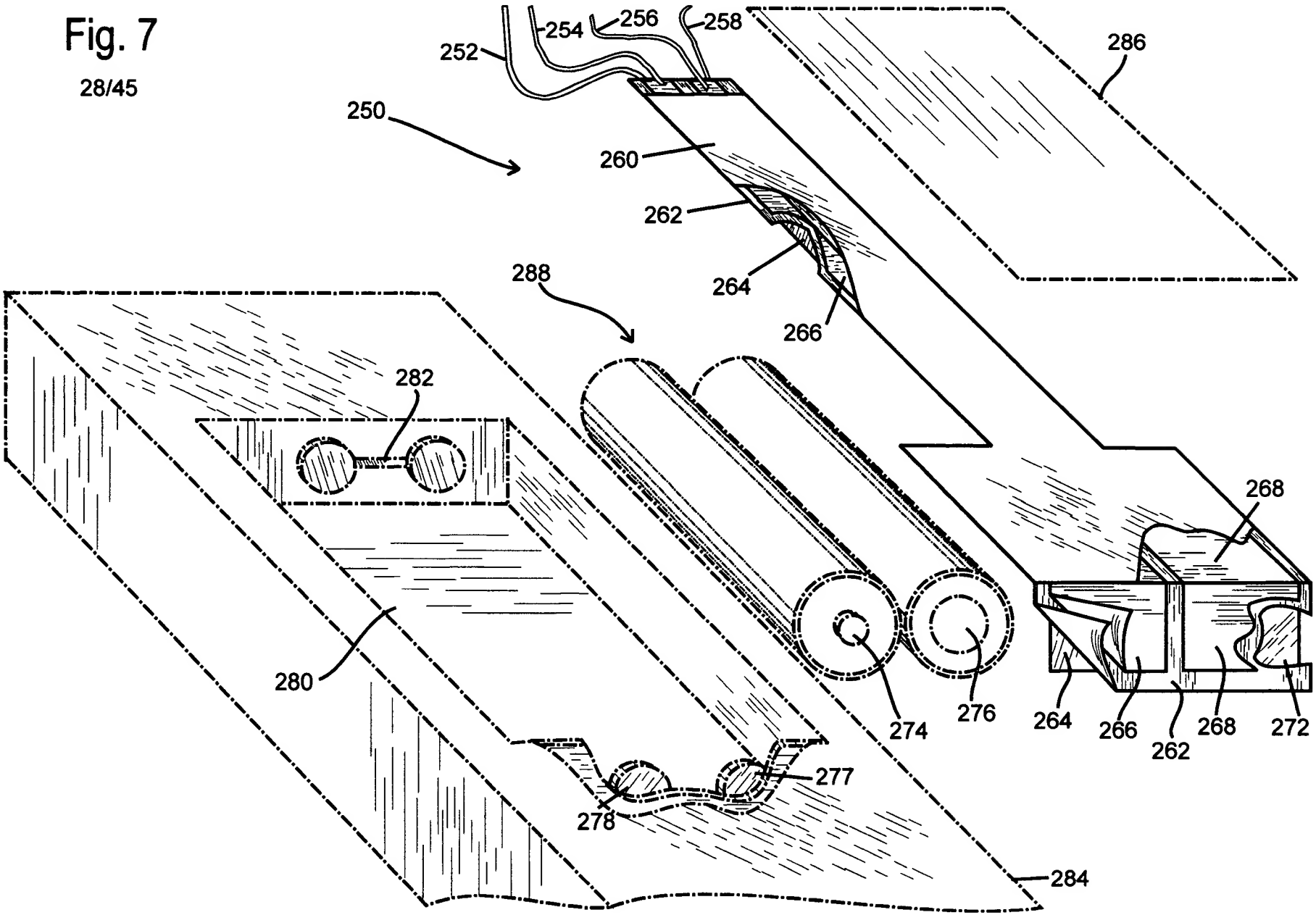
252
254
256
258
286
250
260
262
264
266
288
282
280
268
274
276
264
266
262
268
272
277
278
284

FIG. 8

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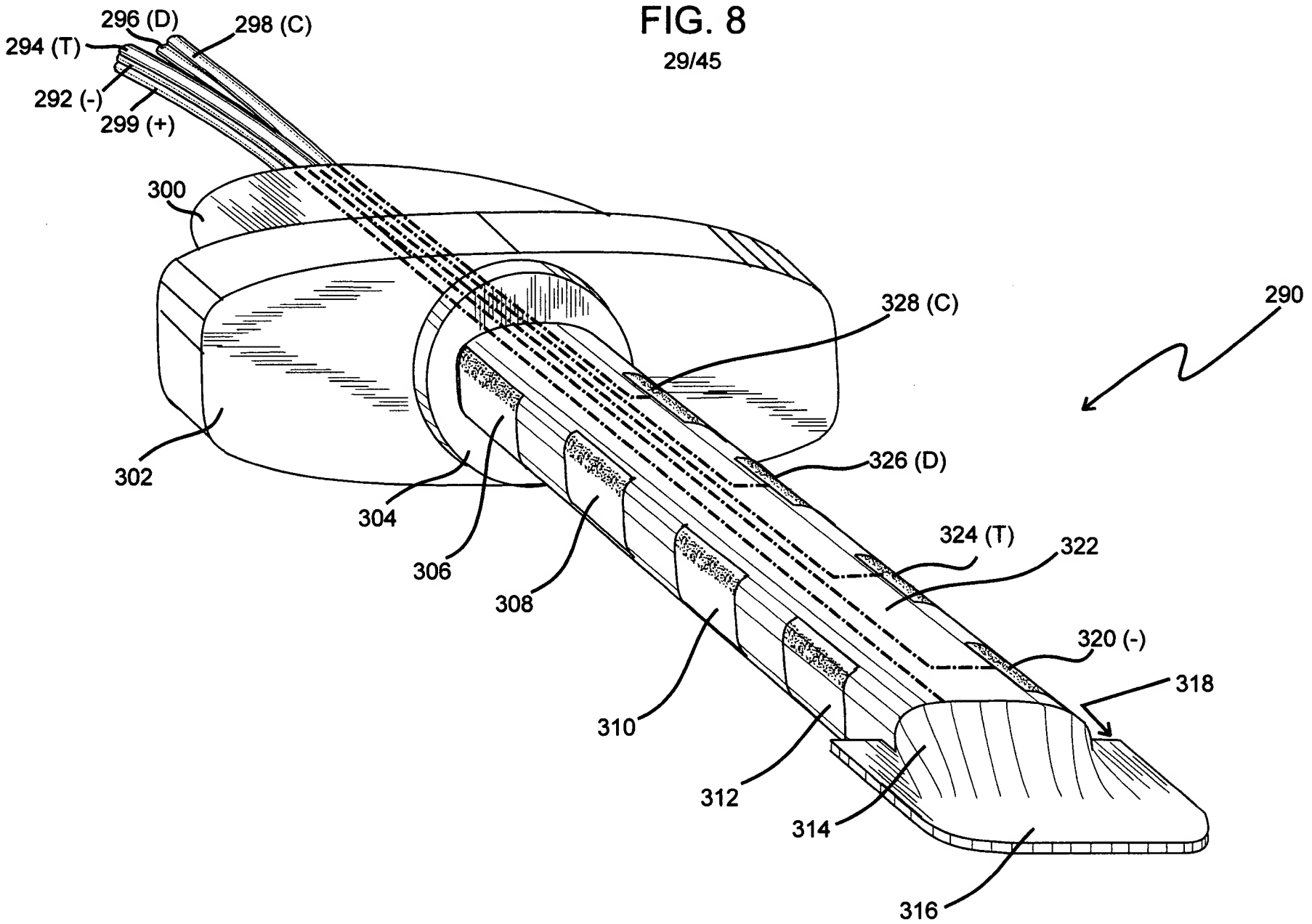
296 (D)
298 (C)
294 (T)
292 (-)
299 (+)
300
328 (C)
290
302
326 (D)
304
306
324 (T)
322
308
320 (-)
318
310
312
314
316

Fig. 9A

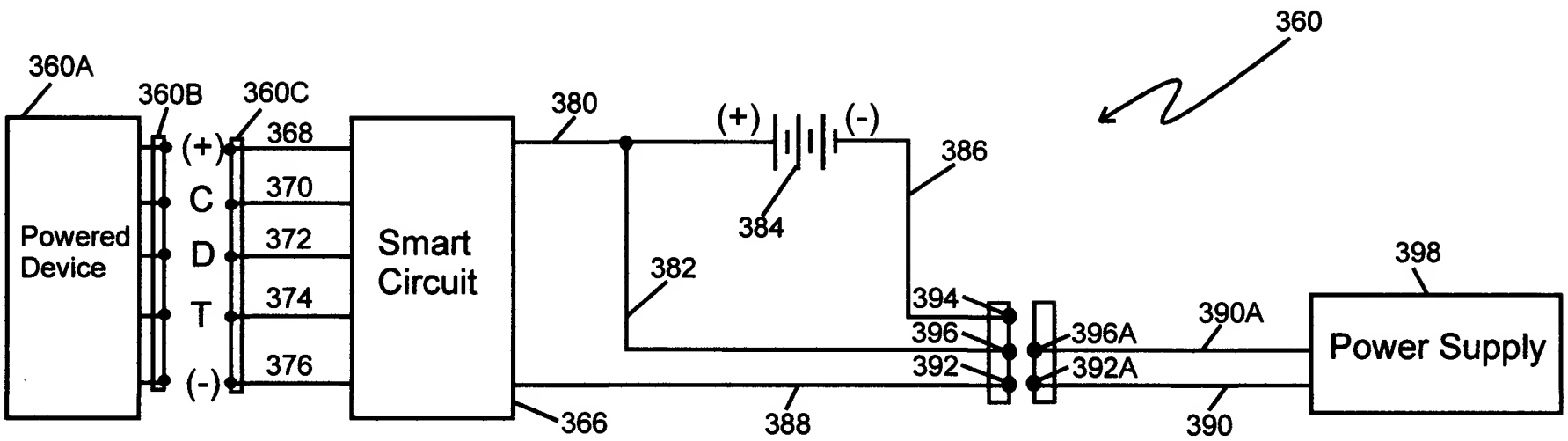
360
360A
360B
360C
Powered Device
(+)
C
D
T
(-)
368
370
372
374
376
Smart Circuit
380
(+)
(-)
384
386
382
394
396
392
396A
392A
390A
398
Power Supply
366
388
390

Fig. 9B

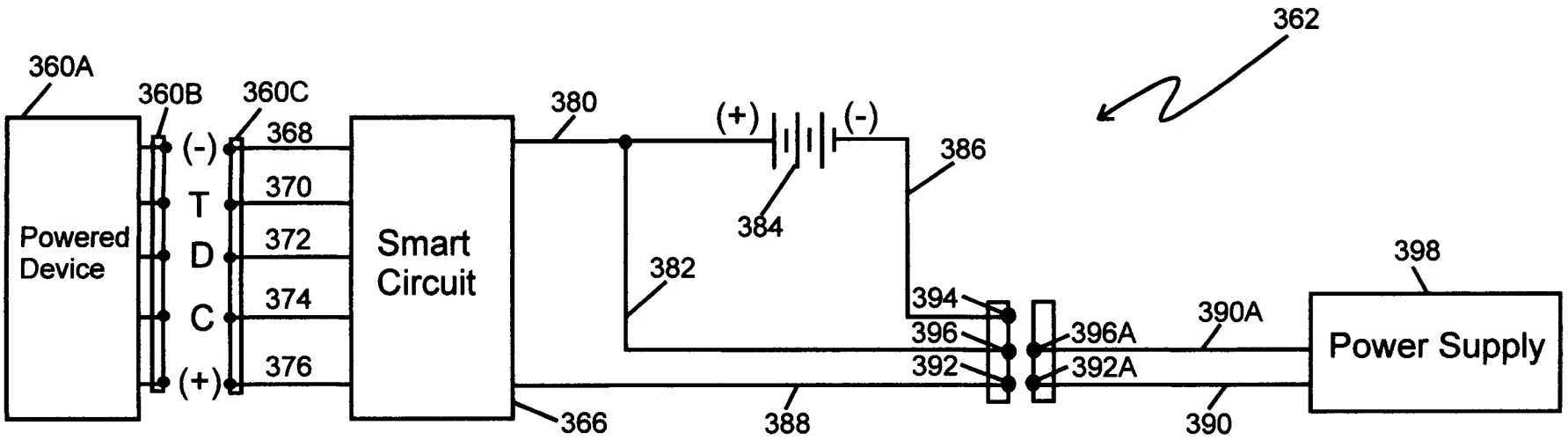
362
360A
360B
360C
380
(+)
(-)
368
386
Powered Device
(-)
T
D
C
(+)
370
372
374
376
Smart Circuit
384
382
394
396
392
396A
392A
390A
398
Power Supply
366
388
390

Fig. 9C

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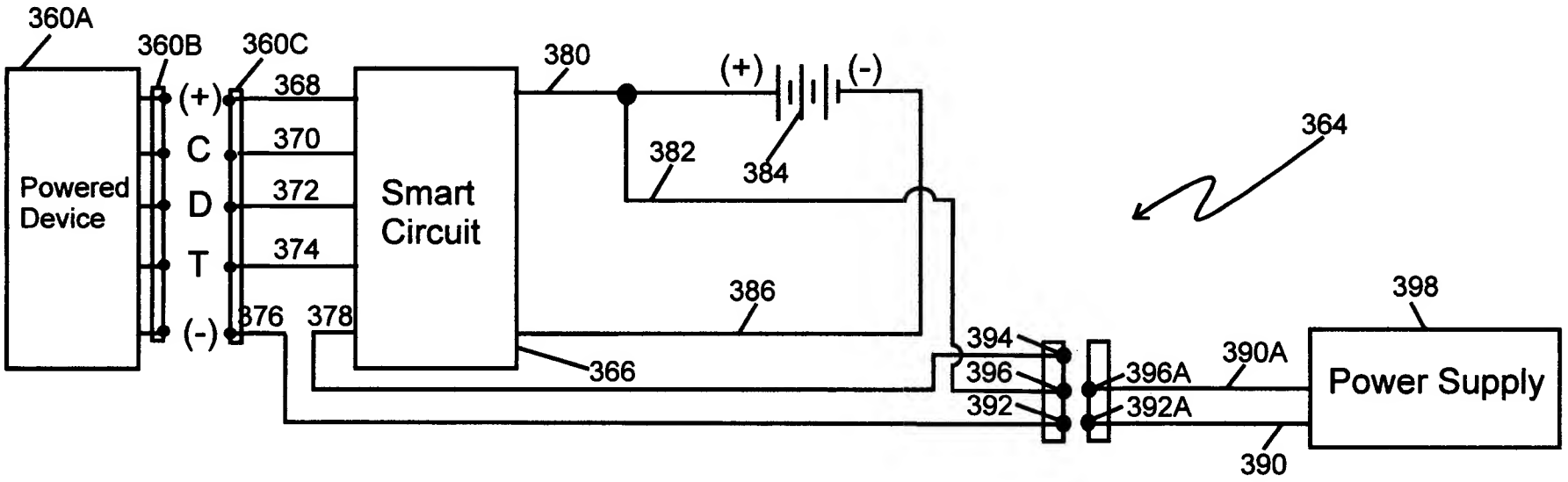
360A
360B
360C
Powered Device
(+)
C
D
T
(-)
368
370
372
374
376
378
Smart Circuit
380
(+)
(-)
382
384
386
364
366
394
396
392
396A
392A
390A
398
Power Supply
390

Fig. 9D

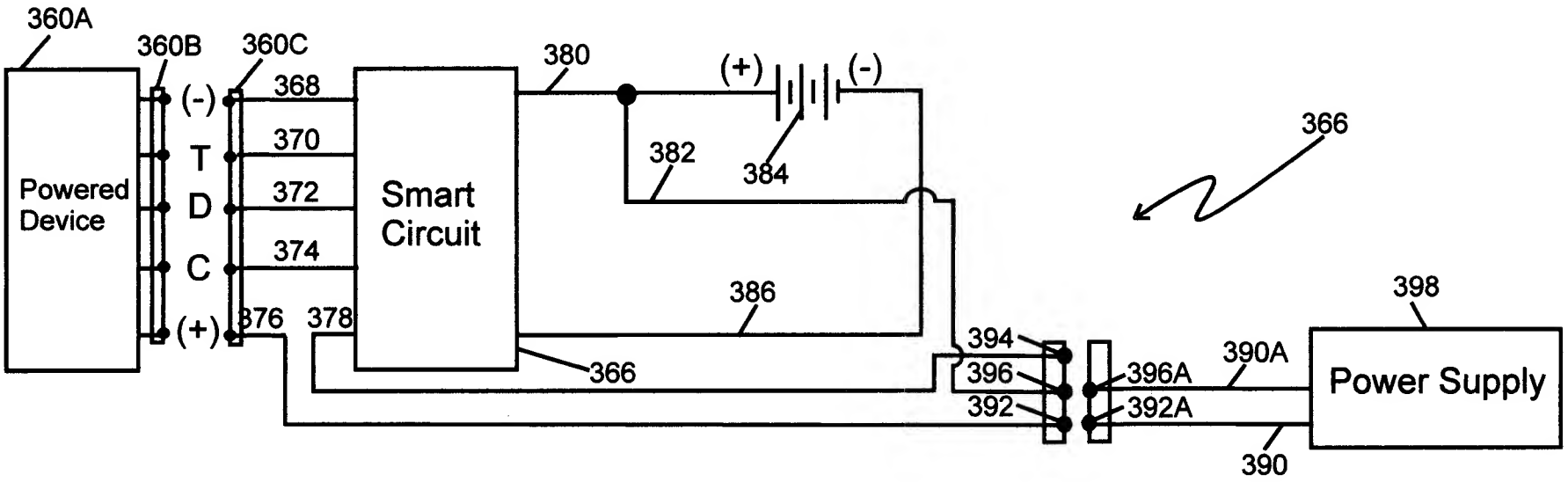
360A
360B
360C
Powered Device
(-)
T
D
C
(+)
368
370
372
374
376
378
Smart Circuit
380
(+)
(-)
382
384
386
366
366
394
396
392
396A
392A
390A
398
Power Supply
390

FIG. 10

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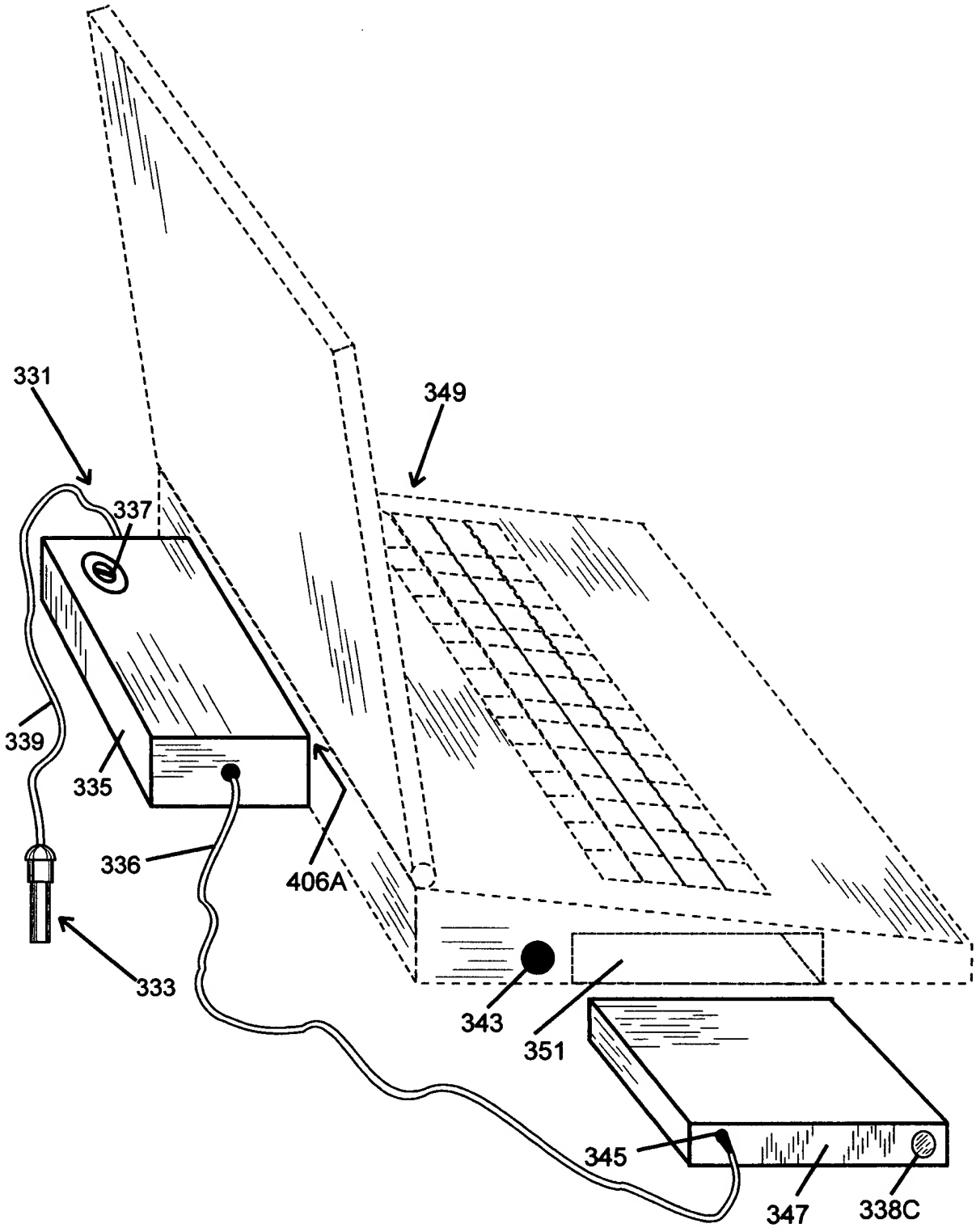

FIG. 11

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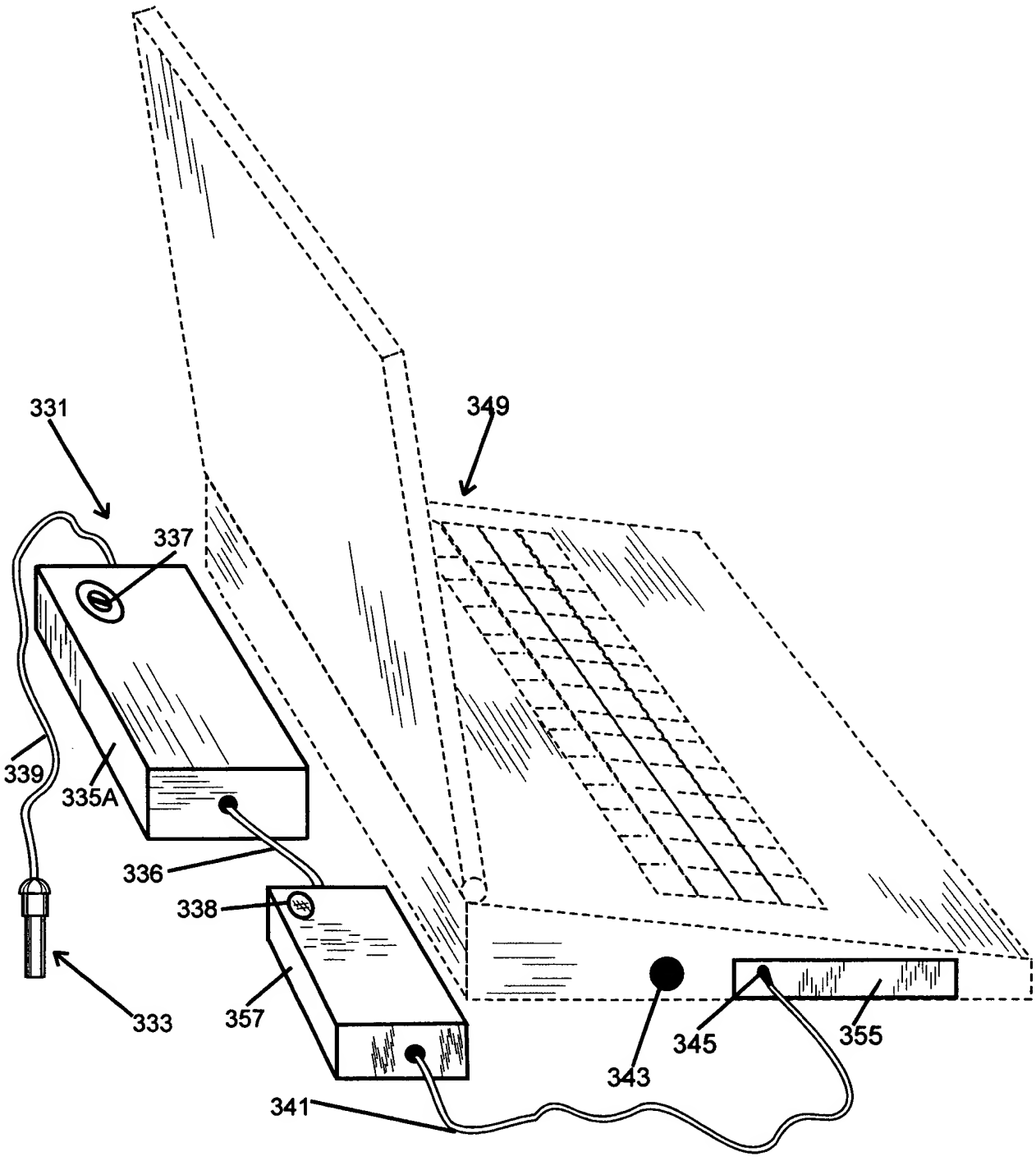

FIG. 12
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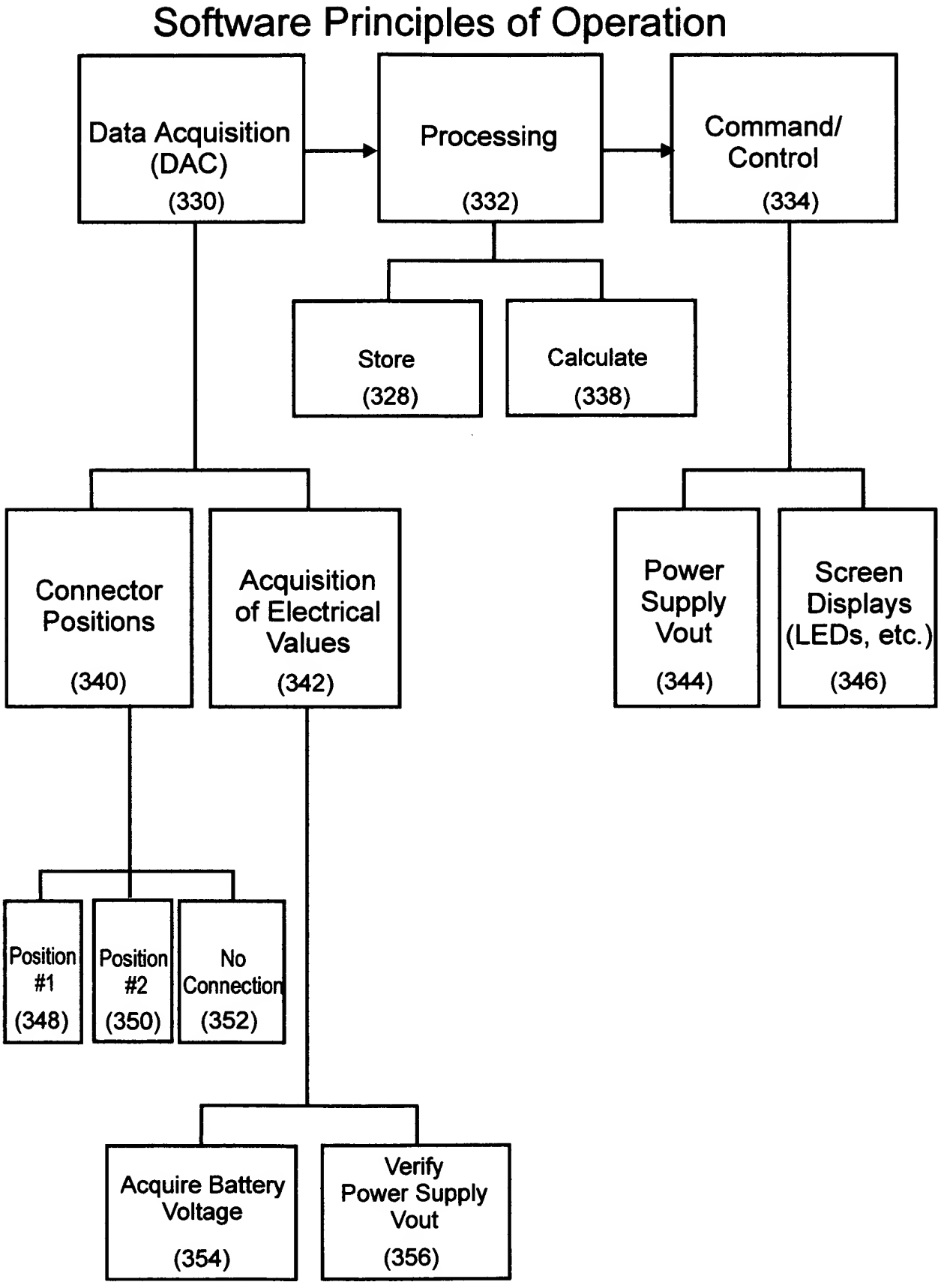
Software Principles of Operation
Data Acquisition (DAC) (330)
Processing (332)
Command/ Control (334)
Store (328)
Calculate (338)
Connector Positions (340)
Acquisition of Electrical Values (342)
Power Supply Vout (344)
Screen Displays (LEDs, etc.) (346)
Position #1 (348)
Position #2 (350)
No Connection (352)
Acquire Battery Voltage (354)
Verify Power Supply Vout (356)

FIG. 13-1

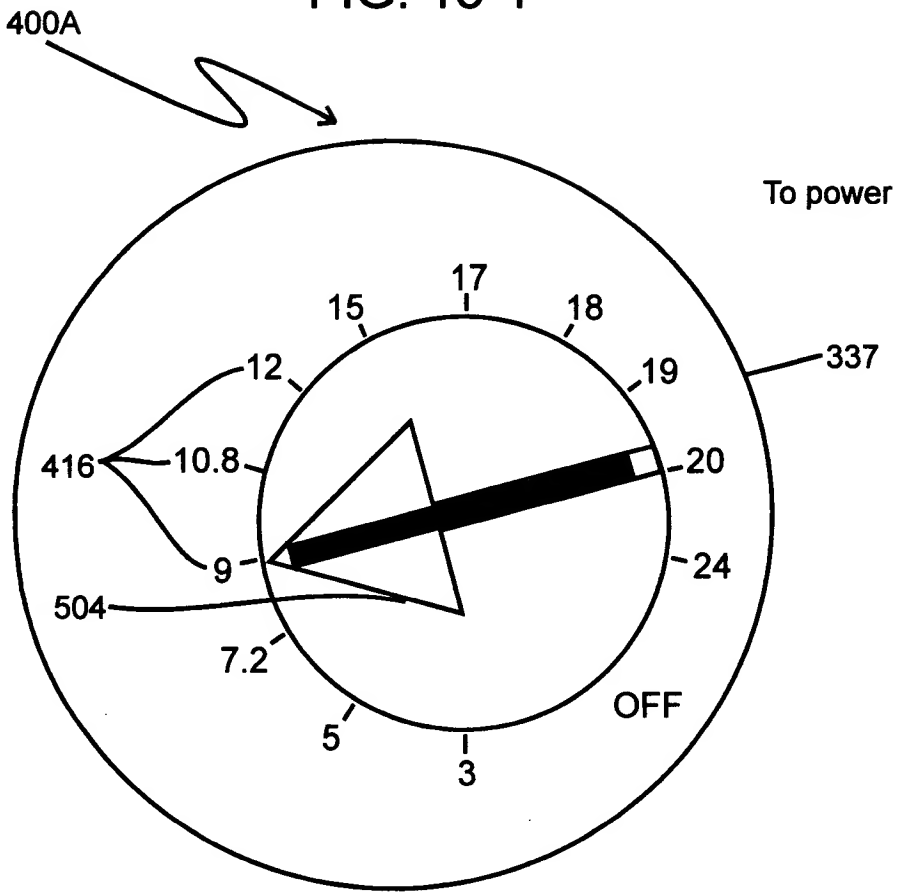

FIG. 13

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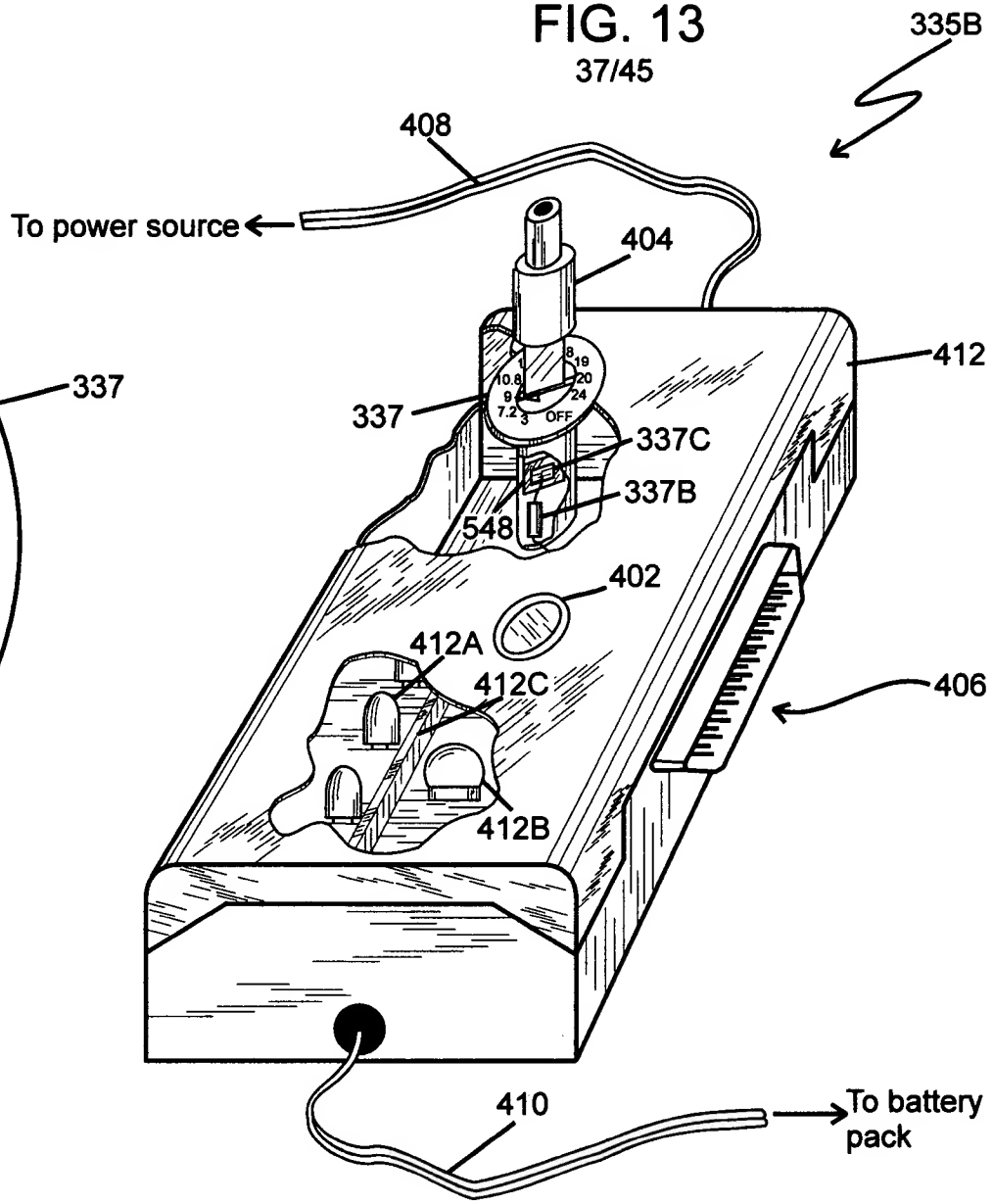

Fig. 13A

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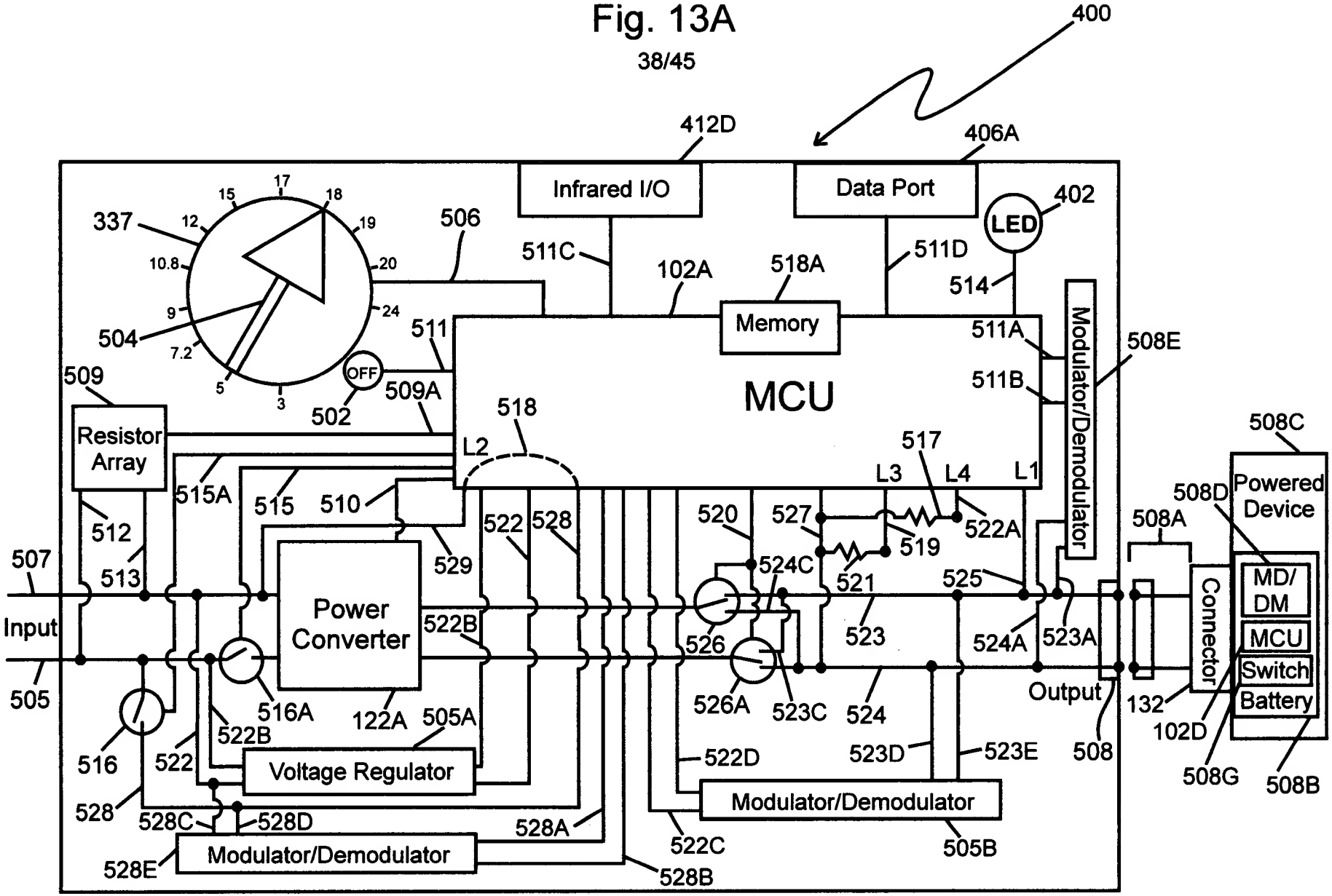
400
412D
406A
Infrared I/O
Data Port
LED
402
337
506
511C
102A
518A
511D
514
Memory
511A
Modulator/Demodulator
508E
504
511
MCU
511B
509
OFF
502
509A
518
Resistor Array
L2
517
L3
L4
L1
508C
Powered Device
508D
515A
515
510
522
528
520
527
519
522A
508A
512
529
524C
521
525
MD/ DM
507
513
Power Converter
522B
526
523
524A
523A
Connector
MCU
Input
526A
523C
524
Output
Switch
132
Battery
505
516A
122A
505A
102D
516
522B
522
Voltage Regulator
522D
523D
523E
508
528
Modulator/Demodulator
508G
508B
528C
528D
528A
522C
505B
528E
Modulator/Demodulator
528B

Fig 14

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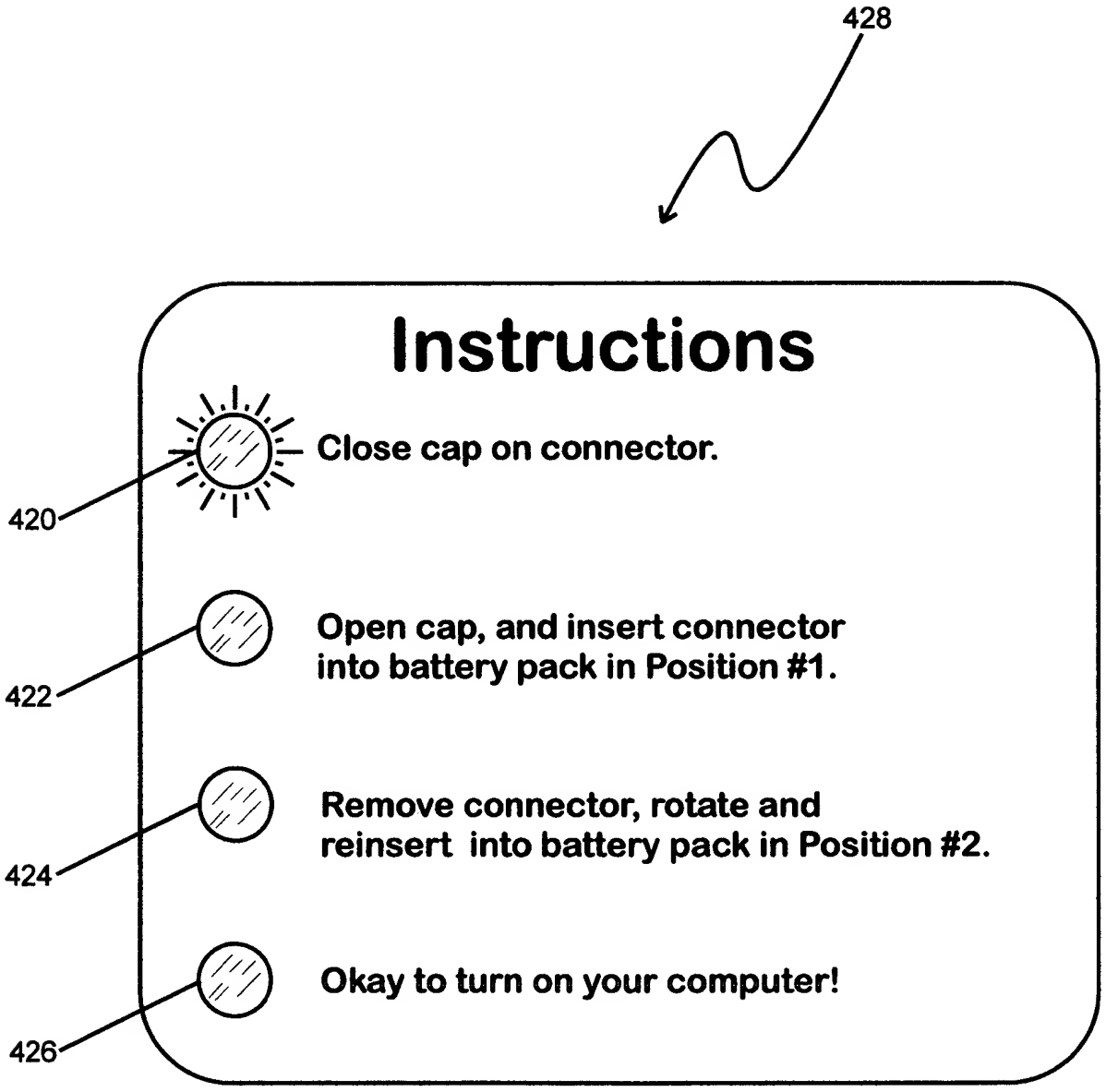
428
Instructions
Close cap on connector.
420
Open cap, and insert connector into battery pack in Position #1.
422
Remove connector, rotate and reinsert into battery pack in Position #2.
424
Okay to turn on your computer!
426

Fig. 15

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Vmin and Vmax Compared to Standard Battery Pack Voltages

Voltages Are Shown As Design Minimum/Maximum Values					
	Ni-Cad	**NiMH**	**Li-Ion (Coke)**	**Li-Ion (Graphite)**	**Li-Polymer**
Cell Voltage	1.25/1.299	1.25/1.32	2.50/4.20	3.60/4.10[1]	3.0/4.20
Cells/Pack[2]					
3	----	----	7.50/12.60	10.80/12.30	9.0/12.60
4	5.00/5.196	5.00/ 5.28	10.00/16.80	14.4/16.4	12.0/16.80
6	7.5/7.794	7.5/7.92	7.50/12.60	10.8/12.3	9.0/12.60
8	10.0/10.392	10.0/10.56	10.00/16.80	14.4/16.4	12.0/16.80
10	12.5/12.99	12.5/13.2	----	----	----
12	15.00/15.588	15.00/15.840	----	----	----
Minimum Cell Voltage[3]					
4	4.00	4.00	10.00	10.00	10.00
6	6.00	6.00	7.50	7.50	7.50
8	8.00	8.00	10.00	10.00	10.00
10	10.00	10.00	----	----	----
12	12.00	12.00	----	----	----
Load Current[4]	>1C	0.5C	1C	1C	1C

[1] Graphite-based Li-Ion cells are rated @ 3.0-4.1 VDC. Coke-based Li-Ion cells are rated @ 2.5-4.2 VDC.
[2] Voltage and cells-per-pack do not take into consideration whether cells in a pack are series or parallel wired. For example, a 14.4-volt Li-Ion pack can have two cell wiring configurations. Four-cell packs yield a 14.4 VDC pack rated @ 2025 MAh, while 8-cell packs are rated @ 14.4 VDC 4050 MAh.
[3] "Minimum Cell Voltage" is the lowest voltage to which a cell can safely be discharged.
[4] Load current is typically expressed as a ratio of charge rate.

Fig. 16

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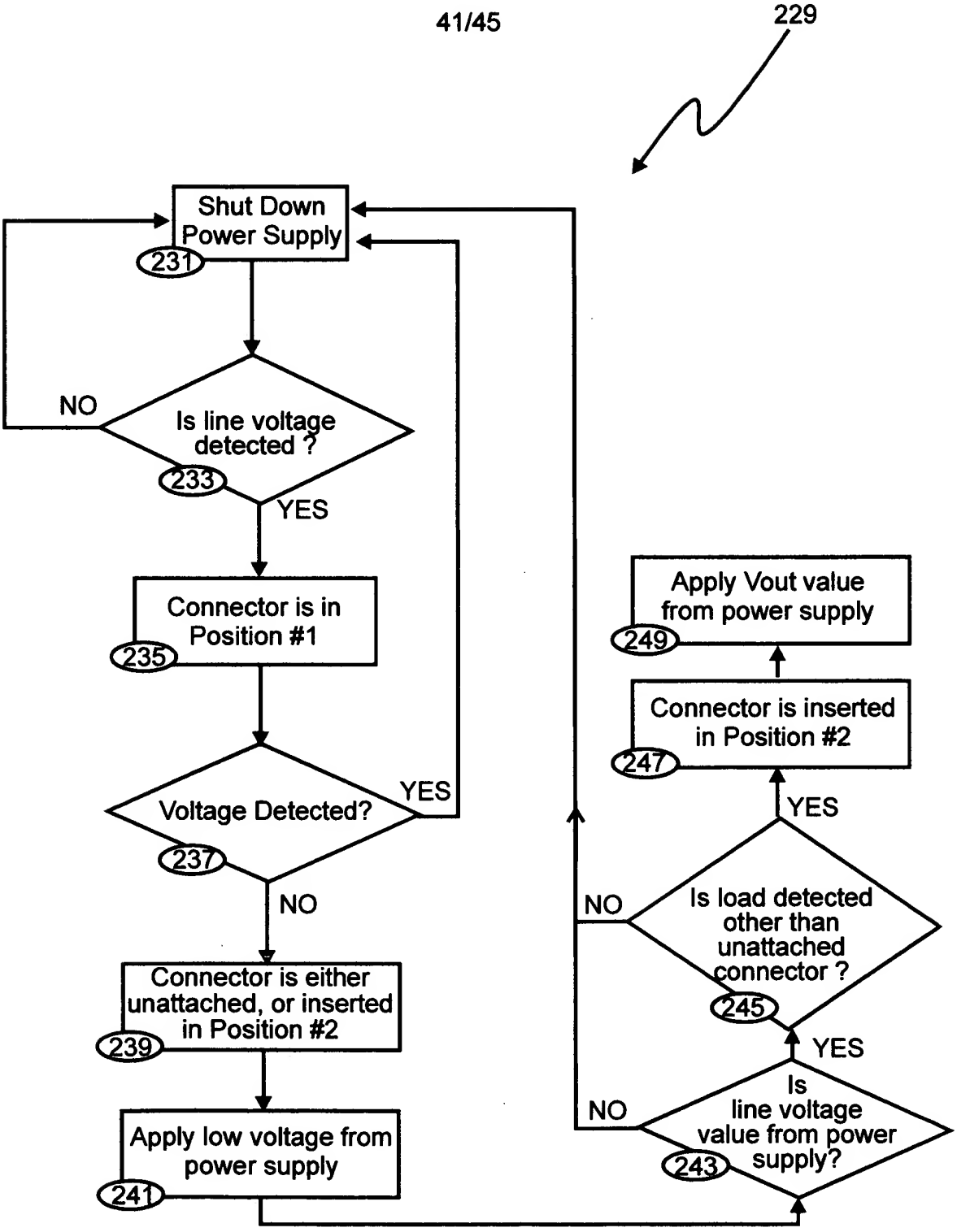
229
Shut Down Power Supply
231
NO
Is line voltage detected ?
233
YES
Connector is in Position #1
235
Voltage Detected?
237
YES
NO
Connector is either unattached, or inserted in Position #2
239
Apply low voltage from power supply
241
Apply Vout value from power supply
249
Connector is inserted in Position #2
247
YES
NO
Is load detected other than unattached connector ?
245
YES
NO
Is line voltage value from power supply?
243

Fig. 17

1001

Connector Position	Software/Hardware Sensing Function
Not Connected	Sense voltage first. If no voltage detected, apply low power and sense current.[1]
Position #1 (To Battery Cells)	Sense voltage.[2]
Position #2 (To Powered Device)	Sense voltage first. If no voltage detected, apply low power and sense current.[3]

[1] If connector cover 530 in Fig. 6D is used, the resistive value of element 534 is predetermined and available in a software look-up table.
[2] Voltage detected will be from the battery, and not the power supply.
[3] Detected current will not be the same as that in footnote #1.

Fig. 18

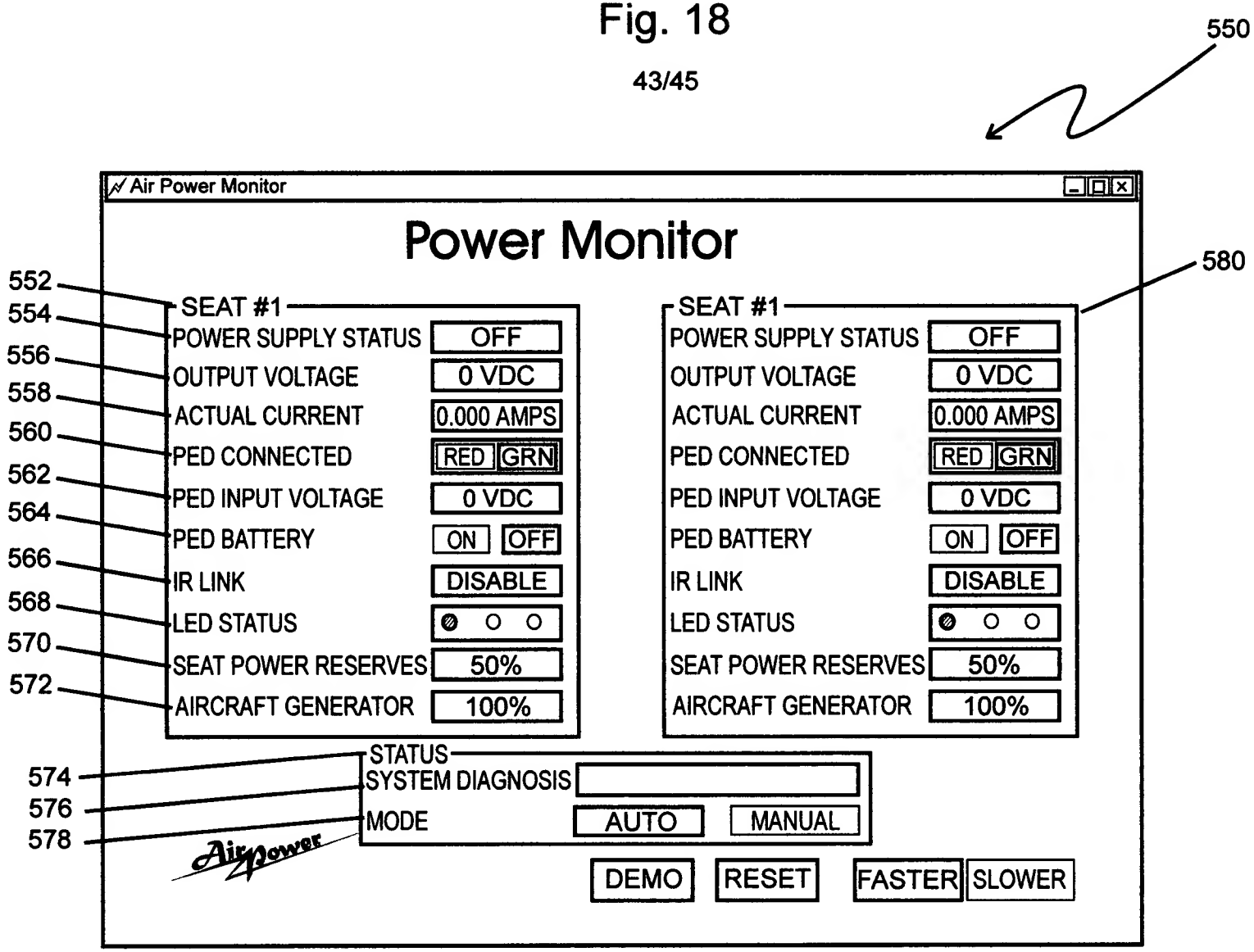
550
Air Power Monitor
Power Monitor
580
552
554
556
558
560
562
564
566
568
570
572
SEAT #1
POWER SUPPLY STATUS
OUTPUT VOLTAGE
ACTUAL CURRENT
PED CONNECTED
PED INPUT VOLTAGE
PED BATTERY
IR LINK
LED STATUS
SEAT POWER RESERVES
AIRCRAFT GENERATOR
OFF
0 VDC
0.000 AMPS
RED GRN
0 VDC
ON OFF
DISABLE
50%
100%
SEAT #1
POWER SUPPLY STATUS
OUTPUT VOLTAGE
ACTUAL CURRENT
PED CONNECTED
PED INPUT VOLTAGE
PED BATTERY
IR LINK
LED STATUS
SEAT POWER RESERVES
AIRCRAFT GENERATOR
OFF
0 VDC
0.000 AMPS
RED GRN
0 VDC
ON OFF
DISABLE
50%
100%
574
576
578
STATUS
SYSTEM DIAGNOSIS
MODE
AUTO
MANUAL
Air Power
DEMO
RESET
FASTER
SLOWER

Fig. 19

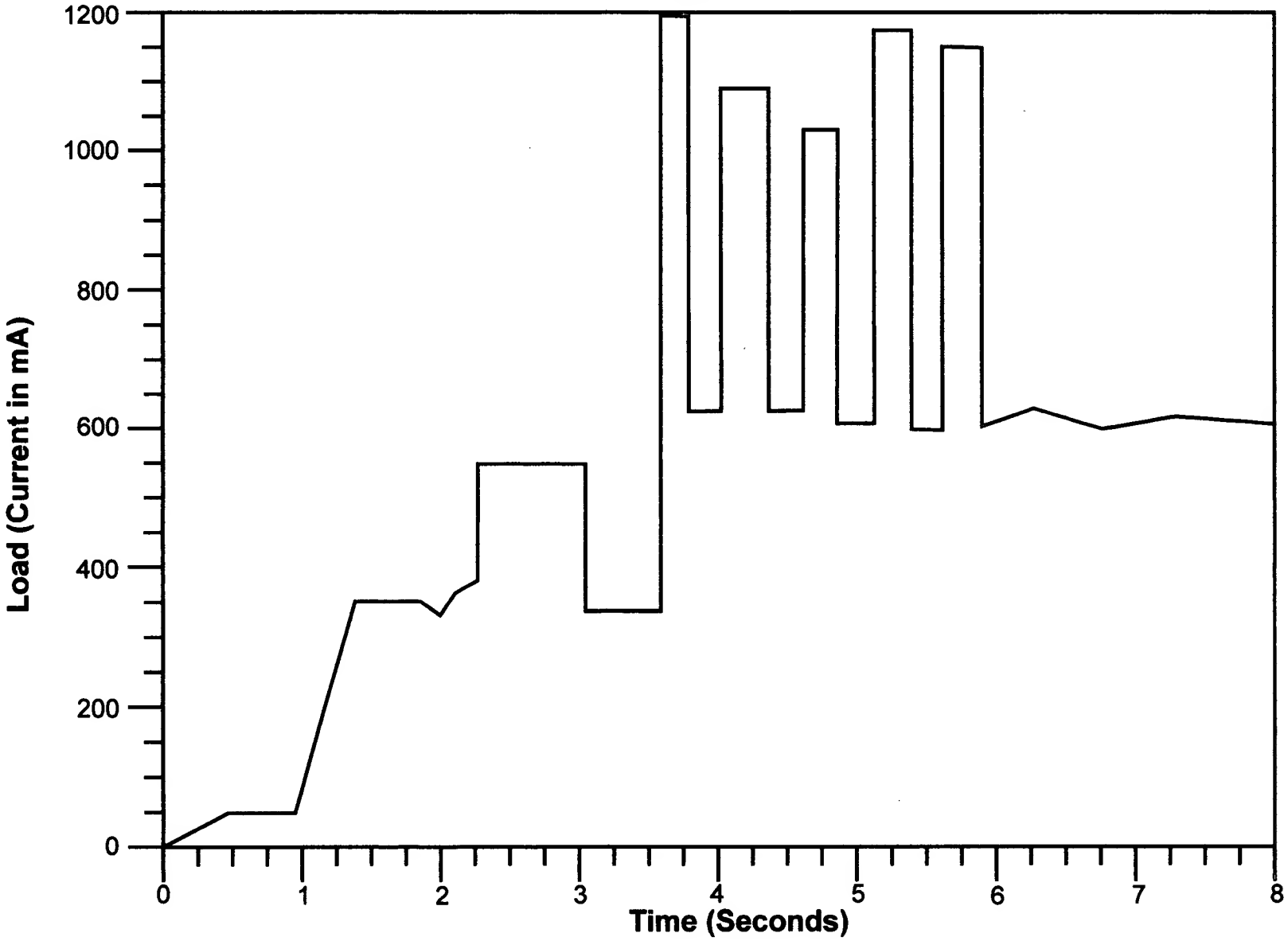
1200
1000
800
600
400
200
0
Load (Current in mA)
0
1
2
3
4
5
6
7
8
Time (Seconds)

Fig. 20

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Look-up Table: Line Load (Resistive Values)		
Line Load (Ω Value)[1]	**Identifier**	**Hardware Description**
.20 Ohms	LL^0	No power cord (power receptacle empty)
.45 Ohms	LL^1	Power cord only (no connector attached)
.85 Ohms	LL^2	Power cord, with connector attached (connector cap is attached)
.60 Ohms	LL^3	Power cord, with connector attached (connector cap removed). Assembly is not inserted in battery pack.
$LL^4 = LL^3 + Variable^2$	LL^4	Power cord, with connector attached (connector cap removed). Assembly inserted in battery pack, but with GREEN Side #2 upward (correct insertion, but battery pack removed).
$LL^5 = LL^3 + Variable^3$	LL^5	Power cord, with connector attached (connector cap removed). Assembly inserted in battery pack, but with GREEN Side #2 upward (correct insertion, battery pack inserted in powered device). Powered Device is OFF.
LL^5 @ Vout	LL^6	Computed value of LL^5 @ Vout. Basis is LL^5 @ low voltage.
$LL^7 = LL^6 + Variable^4$	LL^7	Power cord, connector assembly inserted #2, with powered device's switch turned on (computed @ Vout).

Allowable error = 5%

---

[1] The Ohm values shown are not necessarily indicative of actual resistance readings of actual devices. Since resistive values of any element can be manipulated at the time of manufacture, it would be prudent to use resistors to rectify any deviation from a set target value.

[2] The added load of a removed battery pack cannot be determined as a real-time event, but can only be a pre-determined load, or range of loads.

[3] "Variable" is added load of powered device circuits between the battery pack and the ON/OFF switch.

[4] "Variable" is a detectable (and likely significant) increase in powerline load, as compared to known value LL^6.